THE BUILDING STUDENT'S SERIES

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LATELY PRINCIPAL, L.C.C. BRIXTON SCHOOL OF BUILDING

HISTORY OF BUILDING

(BOOK 1)

HISTORY OF BUILDING

(BOOK I)

BY

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AUTHOR'S PREFACE

THIS little book aims to give a simple story of the history of building in this country up to A.D. 1800. The building of early civilizations and of Greece and Rome is included to show the progressive ideas, and the adaptations of structural design due to climate, available materials, and other influences.

The political and social historical background is given and its effect upon building is emphasized.

Facts have been carefully selected, bearing in mind those that one might reasonably expect a secondary school student to know after studying the history of building. As far as possible these facts are presented in a logical manner, as solutions to problems, or as results from certain causes. "Why," has been considered of more importance than "how."

Although written for the first half of a two-year course in a secondary technical school of building, it should be suitable for use in other secondary schools whether Art, Modern, or Grammar, and it may easily be extended to cover more than one year's work.

For one year the work in this book may be arranged as follows—

First Term: Beginnings to Byzantine;
Second Term: Norman and Gothic;
Third Term: Tudor to the end of the Eighteenth Century.

Many teachers may prefer to leave the study of the Classic Orders until the third term, and this may easily be done.

It is hoped that by using this book students will be spared much of the unduly long and boring note-taking which has been so much associated with this subject. To assist in organizing class studies, each full-page figure of illustrations may be taken as the basis for one week's drawing or sketching.

A short, but bright and stimulating, talk should be a feature of each lesson. This should have a very limited objective and should lay-in firmly the points of essential value, giving, as it were, the general perspective of the week's work. The talk might well be illustrated by lantern or epidiascope. Following the talk, the class may spend the remainder of the lesson

drawing the main visual features of the subject for the week in their note-books.

For home-study the students will write up notes on the week's work, partly from memory of the talk and partly by book reference. In this way they will develop their own initiative in the arrangement and selection of facts.

The drawings aim to be simple and clear, and to give the essential feeling of the period illustrated. It is *not* intended that every drawing shall be reproduced in the student's note-book; each drawing is given for the purpose of illustrating a point in the text, and the teacher will find it easy to make a selection for his own purpose.

The second book will deal with building from the close of the eighteenth century up to the present date.

F. C. H.

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CHAPTER I

THE INFLUENCES AFFECTING BUILDING

We all take things as they are, far too much for granted, and building is no exception to this rule. "Oh! building and architecture," we say, "I suppose it just happened." Like Topsy, we think it just "growed up." Yet though building has grown and developed through the ages, it certainly has not "just happened." There are definite reasons for every detail of every phase in the long and ever-changing history. The student will no doubt hear much of tradition, but if he asks why a building operation is carried out in a certain way and is told that it is "always" done in that way, the answer displays not tradition but simple ignorance. I hope this book will make you think and go some way towards understanding the history of building and those ideas, and we hope ideals, which are expressed in the buildings you see around you, and, I trust, in those which you will, in the future, have some share in creating.

There are many reasons why a building should be erected in a particular form or shape, and we usually call these reasons *influences*. Let us consider some of these reasons and see how and why they affect the builder.

Necessity for Shelter from the Elements and Protection from Animals. It is very obvious that man needs a shelter, and needs it more than any other creature. He is not designed by nature to resist wet or cold, he has no thick hairy covering, yet he has spread his kind over all parts of the world. His children take longer to grow into the adult stage than those of any other animal, and they are particularly helpless and dependent upon their parents' protection. In his own person man is by no means well armed; he has no great tusks, or horns and his teeth are small. He must therefore obtain shelter from

the attacks of animals as well as from attacks by others of his own species. He has also to build storage places for his food, and for his possessions.

Life Lived by the People Needing the Dwellings. Let us consider the kind of life led by the people for whom buildings are to be erected. If the life is roaming and unsettled as was the case in primeval times, a temporary shelter is required. Such shelter may be at hand in the form of caves, and caves would eventually lead to a more settled existence. A hole in the ground or pit covered with branches or skins formed another shelter. From this it was but a short step to the tent (Fig. 1). In the tent man had a portable shelter, still used to-day by trappers and hunters, by nomadic peoples, by campers, and by armies. The tent is also used nowadays for those temporary structures required by travelling circuses, flower shows, and similar activities.

When settled communities are to be provided with shelter, something more permanent and lasting is required. An interesting example of early housing is the lake dwelling (Fig. 1). The people were probably fishermen, and by building their homes on piles driven into the bed of a lake they could live in comparative security. Life in those days must have been very precarious. Men had to fear attack from all sides, from wild animals, and even more from foraging tribes, constantly driven from one land to another through pressure of other and stronger tribes, or by famine and the necessity for finding food.

The discovery of agriculture made it possible for a tribe to settle in one district, and though they had constantly to fear famine and attack, yet eventually a settled community would arise. Then the buildings would no longer have to be designed with a view to portability, and could be adapted to the altered living conditions of a settled people.

Building Materials Available. The next influence is that of the building materials available, If timber is growing in abundance, then it forms an excellent and economic building material. We may notice how this has affected in the past, and still does affect, the character of the buildings. In Norway and Sweden, where there are great forests, the wooden house is common. We notice this also in those parts of North America that are heavily wooded. In England we observe

FIG. 1. PRIMITIVE DWELLINGS

that in various parts of the country the traditional local style of building has been affected by the materials that were most nearly to hand.

Stone and marble lead to varied styles depending on whether the materials can be quarried in large blocks or in comparatively small units. Large blocks of such building material lead to post-and-lintol construction, while small units lead to arched construction. Bricks may be considered, in a sense, as small stones, but their particular quality lies in the fact that they are standardized in size. To-day we have further materials in the form of steel and ironwork, and concrete; science may quite conceivably add considerably to our building materials.

Transport. It is to be noted that the question of availability is linked up with transport, and it is obvious that increases in the efficiency of transport mean that materials may become economically possible for use in areas where they were previously not considered. Thus transport is an essential factor in influencing building.

Climate. The climate of a country has a very great influence on the character of its buildings. Heavy rainfall is well countered by pitched roofs, while much snow makes it necessary to provide an even greater slope. It will be readily seen that the amount and strength of sunlight cause modifications in the amount of window space. The need for shade leads to the provision of verandahs. Strong winds and exposed positions require modifications in the design to meet these conditions.

Climate may also affect the choice of materials, and should lead to changes in the design of more or less aesthetic details. Mouldings, for example, secure their effect simply by the light and shade they produce. It should be clear that details in the bright Mediterranean sunshine would appear different from the same details in a smoky industrial city in Northern Europe. The same effect may be observed in colour. That which had a certain pleasing effect in light coloured stone looks very different when that stone is covered in grime.

Geographical Influences. Bound up with climate, of course, is the influence of geography, which has a profound effect on the lives and character of the people. Large fertile plains give rise to agricultural communities, cottages, farms, villages and

the small country market town. On the other hand, proximity to trade routes gives rise to the growth of commercial centres. The character of such places tends to become cosmopolitan, while the agricultural districts seem always to retain their own local feeling and traditions. In large countries with great rivers, civilization for obvious reasons, both agricultural and commercial, tends to "ribbon development" along these highways. Egyptian civilization is based on the Nile basin; Babylonian and Assyrian on the Euphrates. The presence of numerous valleys and harbours greatly affected the character of the Greeks and Romans and assisted these peoples to found empires connected by the sea rather than by land.

We in this country have learned much from Europe, but we have always been successful in giving our building that stamp of sturdy independence which is the possession of an island people.

History. Largely because of geography there emerges the influence of history, for most historical effects can be traced back to geographical causes. Yet history has a profound effect on the life and feelings of a people, and they will always be under its influence. The results of crusades may easily be found in European architecture; prosperity in sheep farming and the wool trade is reflected in the fine churches of East Anglia and the Cotswolds. The rising middle class expresses itself in the English Renaissance.

History has a habit of expressing itself in two ways, one deeply and, as it were, below the surface, and the other very superficially and in very obvious details. Yet it is the first influence that is most important and lasting, and the student should try hard to recognize it in every period. Very often it is expressed in the fundamentals of construction. The difference between Gothic and Classic architecture can never be understood merely by a study of ornamental details.

The Social Structure. As we have already noted, Architecture and Building reflect the life of the people who plan and construct the buildings. It will be seen, therefore, what an important effect the social structure of any period has on its buildings.

One of the greatest problems in any community is the organization necessary for production, and especially in the production concerned with the two greatest industries,

agriculture and building. Each of these is dependent on the other. In the ancient civilizations slavery was the main solution; in medieval times there was the feudal system of serfdom; to-day we have wage-earners. It is interesting to trace the similarities and differences between the three systems, and to notice the effect on architecture.

Some of the great works of the old civilizations could only have been produced by such cheap labour as slavery provided. Let us consider the building of the Great Pyramid. When we remember that the Egyptians could have had but the most primitive methods of transport, and erection devices, the number of man-hours must have been enormous. Yet this was merely a tomb.

The social system affects the life and outlook of the community. We can see this expressed in building as we study the successive historical styles. How curiously, for example, do we see the devotion and reverence of the medieval craftsman mingled with his peculiar sense of fun in our Gothic cathedrals and parish churches. The social structure also affects the type and nature of the buildings erected. How the Industrial Revolution caused the ill-considered and in many ways evil growth of our large centres of industry is a problem with which we are dealing at the present time.

Religion. It has been mentioned that the Great Pyramid was merely a tomb: perhaps "merely" is hardly the right word, for, owing to the religious outlook and beliefs of the Egyptians, the care of the dead body was of the utmost importance. We see, therefore, that we must include "religion" as an important factor in the development of building. Religious buildings form a large proportion of the examples from which we may study architectural history. In them is expressed the life, the beliefs, and the ideas of their builders. In many periods, however, religion has done much to dictate just what particular kind of life the people had to live, and it can readily be seen what influence religion will inevitably have on building.

Let us now summarize the influences affecting building; they are—

1. The necessity for shelter.
2. The kind of life lived by the people for whom building is to be done.

3. The materials available for building.
4. The methods of transport.
5. Climate.
6. Geography.
7. History.
8. The social structure of the community.
9. Religion.

Many of these influences are interrelated, and it would be possible to say that the whole list was covered by the one heading "history," yet it makes for clarity to isolate these separate considerations as we have done. It would be easy to add to this list for present-day conditions such items as "By-laws," "Plumbing and Public Services," "Town Planning," and other similar factors which are very important, but they arise in part from the other conditions and although more or less present in all periods do not always assume the same importance. Moreover, they may be considered to come under the heading of details of building rather than influences upon building. Whatever the classification, the main thing is that all these considerations shall enter into our thinking so that we will not be led away by mere superficialities and thus miss the real truths.

CHAPTER II

PRIMITIVE BUILDING

In primitive times man's best form of dwelling was the cave. Here he brought his food, cooked and ate it, building his fires both to do this and to form a barrier against prowling animals, themselves quite ready to utilize the cave for their own shelter. In the cave he would make his flint tools and weapons, and he would in some cases be proud enough of his home to decorate the walls with drawings and paintings of the animals which loomed so largely in his life. The cave drawings from Altamira in Spain show his very realistic appreciation of these animals of which he must have been both the hunter and the hunted; Fig. 1.

If no cave was available, then one had to be built. A hole or pit was made in the ground and this was covered by branches and skins to form a roofing; Fig. 1. The next stage would be to build the shelter above the ground by making a kind of rough hut with branches of trees and clay mud: and here we have the essentials of a building expressed at their simplest—a space screened off by a covering which would keep out the wind, wet, and cold, just as did the cave.

It would soon be found desirable to make further adjustments in the design. Some provision would be found necessary for heating, and, as this meant a fire, then an outlet for the smoke must be provided. Moreover, the heat provided by the fire must be retained in the building. Provision too must be allowed for lighting both by natural and artificial means. During the rainy seasons it would be found necessary, too, that a means should be found for dealing with the problem of damp rising from the ground. Space would be needed for storage, particularly after the development of agriculture. Herds need protection and shelter, and crops need to be kept safely against both thieves and adverse weather conditions. It was indeed the development of agriculture, and particularly that form of agriculture concerned with the sowing and gathering

of crops of foodstuffs, that led to the development of a more settled and advancing civilization. It is significant that the ancient civilizations seem founded upon great rivers, rivers that at periods overflowed their banks and then receded, leaving particularly rich plant food in the form of mud, which was left as the waters subsided.

SECTION II

EGYPTIAN AND WESTERN ASIATIC BUILDING

CHAPTER III

THE BUILDINGS OF ANCIENT EGYPT

THE land of Egypt is the land of the Nile. It is the fertile inhabited strip of land on either side of this river which is usually regarded as the birthplace of the first great civilization. The Nile also provides a great highway of transport. The climate is hot and very sunny, although at night there is a great fall in temperature and frosts often occur: in fact it is suggested that the freezing of water was a device used to quarry the large blocks of stone for building. In ancient times stone and clay mud had to form the bulk of the building material, for timber was comparatively scarce and no doubt the bulk of what there was would be wisely used for boat building and furniture.

The Influence of Religion. The life of the Egyptians was very greatly dominated by their religious beliefs. The whole social structure depended upon this foundation. It is not difficult to account for this attitude, for it should be clear to everyone how much a successful harvest meant to them; and the strange action of the Nile in flooding their fields must have been regarded as an occurrence designed exclusively for their benefit. The earthly representatives of the gods were the priests, and the highest office of priesthood was invested in the Pharaoh. The present life was held to be a passing phase in the immortality of man, and great care was taken to preserve the body so that it would eventually rise again.

The Social Organization. Rule was definitely and in every way from the top downward, and this led to a comparatively small ruling class, a large and relatively highly skilled artisan class, and a great slave class. The story of Joseph illustrates, however, that it was possible for a person of great ability,

even though a slave, to rise to a most responsible position. Such a happening, although occurring in the history of many ancient slave civilizations, should be regarded as rare, especially in view of the very large proportion of the population that must have been slaves.

We are able to judge the buildings of the Egyptians to-day by the remains of their temples and tombs and also from

FIG. 2

paintings and sculpture and by models which are found in some of the tombs.

Egyptian Dwellings. The dwelling houses were only of semi-permanent construction, built for the most part of unburnt brick. They had flat roofs which were no doubt used as cool sleeping places, possibly with an awning. The windows were small, for two reasons—firstly, in the bright sunshine of Egypt much light would be admitted by a small opening, and, secondly, the material used for the wall would demand the minimum of breaks in its mass in order that its strength should be maintained. The houses (Fig. 3) varied in size from

a small single chamber to large two- and three-storied houses with open courtyards to give light and air to the surrounding rooms.

Tombs. As has been indicated, the preservation of the dead body until the day of re-incarnation was considered of the greatest importance, and thus we find many remains of tombs. These tombs may be divided into three main groups—

1. The Pyramids.
2. Mastabas.
3. Rock-hewn tombs.

The problem confronting the designer of the pyramids was to construct a place of safety for the body of the Pharaoh which should be everlasting. The solution was to build an immense hill of masonry in the form of a pyramid, in the centre of which was a comparatively tiny chamber containing the mummified body of the Pharaoh. A passage led from the outside of the pyramid and near its base to the chamber. The Great Pyramid of Cheops (Fig. 4) is the most famous example. Originally 482 ft. high, each side of its square base is 760 ft. long and it covers about thirteen acres. It is constructed with massive blocks of stone, some of which are as large as 20 ft. by 6 ft. These came from a great distance and it is not known how they were transported or erected, although many theories have been advanced. It is possible that a combination of earthen ramps and rockers and rollers were used. The entrance is 47 ft. 6 in. above the ground level, and from it a gallery leads upwards to the chamber of the Pharaoh; from this two air shafts communicate with the outer atmosphere. The tomb chamber is sealed off by a stone portcullis weighing about fifty tons. There are two other chambers, the Queen's chamber and a deeper subterranean chamber.

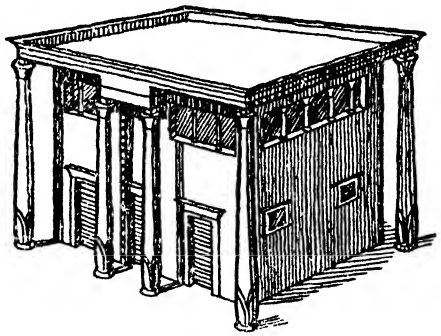

FIG. 3. EGYPTIAN HOUSE

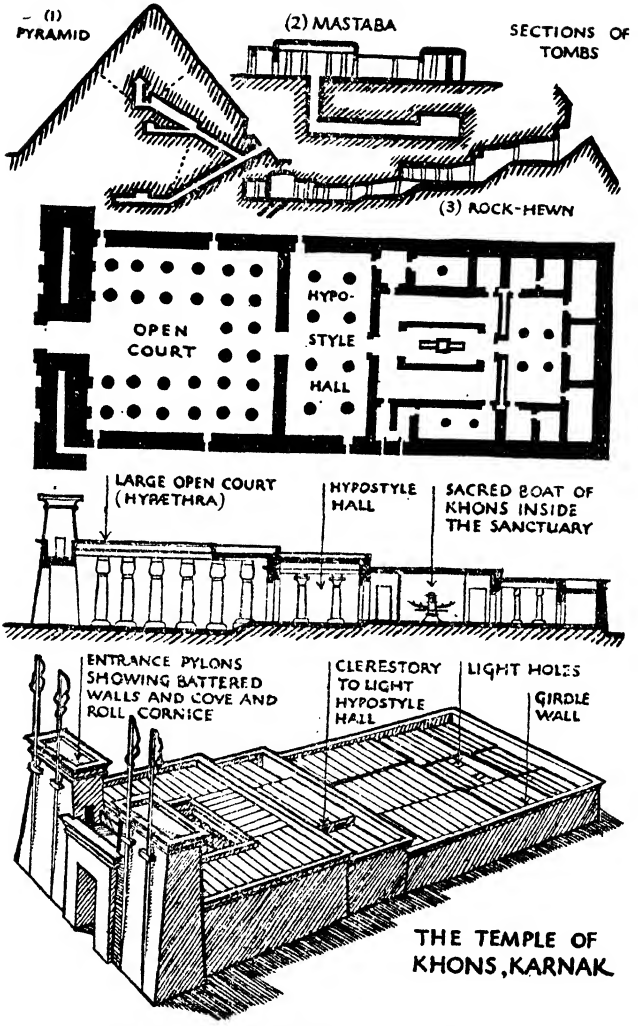

FIG. 4. EGYPTIAN TOMBS AND TEMPLE

After all this care, all this labour and accumulation of material, one is rather disappointed to learn that it failed in its purpose, for it has been broken into and robbed by a succession of peoples.

The Mastaba tombs (Fig. 4) consist of a subterranean tomb with a shaft leading to the ground surface and covered by a small temple arranged in two parts, an inner private chamber and an outer chamber.

The rock-hewn tombs (Fig. 4) are, in a sense, artificial caves cut into the rock. The tomb of Khnamu-hatep at Beni-Hassan has a remarkable entrance, considered by many to be the prototype of the Doric Order (Fig. 5).

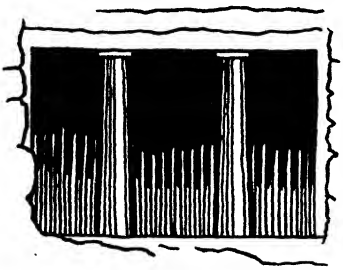

FIG. 5. ENTRANCE TO TOMB AT BENI-HASSAN

Temples. It is in the temples that we have the greatest examples of Egyptian architectural arrangement and building. The plan (Fig. 4) in general is a long rectangle, having the entrance at one end, and the heart of the whole edifice, the sacred *naos* or cell, towards the other. This cell is approached through a succession of spaces and chambers diminishing in size and lighting qualities, but increasing in sacred and mysterious effect. It was permissible only for the Pharaoh and the priests to penetrate into the temple proper. The ordinary man could enter the external courtyard and pass into the succeeding hypostyle hall only. (Note: Hypostyle = under-pillar.)

Egyptian—a Trabeated or Post-and-lintol Style. Egyptian building illustrates one style of construction extremely well. This is the method known as *trabeated* or *post-and-lintol.*

To keep the inside of a building dry, it is necessary to provide a roof. This roof may form the whole building as in a bell- or ridge-tent, but it is usually found much more convenient if the roof itself is raised; and, if the roof is raised, then it must be supported. A simple way to support a roof is to build walls. But for entering the building and to give light, openings must be provided. The space over these

openings must be bridged, and the lintol is the simplest way of doing this. The Egyptians bridged their supports (which were columns made up with drums of stone) by placing across them large stone blocks; these were made to support the stone slabs with which they made their roofs. It will be seen that the distance between the columns from centre to centre (known as the *inter-columniation*) was governed and limited by the size of the bridging blocks.[1]

Character of Egyptian Building. The character of Egyptian building is essentially heavy. The columns had to be massive to bear the weight of stone blocks strong enough to bridge the space required, and in their turn bear the weight of the roofing stones. This heaviness is made less evident by the strong light, which throws the buildings into exciting patterns of light and shade, yet adds to the mysterious air and impressive appearance which was probably sought by the temple builders.

Walls. In the walls, battering (sloping inwards) (Fig. 4) is a typical feature. This was done, most likely, to achieve stability as it would help to resist any outward thrust by the roof. Some authorities suggest that the battering was a reminiscence of the early mud walls. It certainly contributes its share to the massive effect. The walls were usually finished with a roll and hollow moulding (Fig. 4). Some maintain that this originates from a wall of reed and mud bending as it carried the weight of the roof.

Columns. The columns used were very heavy in proportion: rarely was the width less than one-sixth of the height (Fig. 6). Their design was very much inspired by nature. The bases were flat and heavy, and from these grew the shafts, constricted at their origins but bulging out rapidly and then tapering as they ascended. The capitals (Fig. 6) were modelled on the bell shape of the lotus flower, or the bud shape, or the coving shape of the palm. There are examples extant where the bell shape is so treated that it might be the origin of the Greek Corinthian capital: we have already mentioned the capitals in the rock tombs at Beni-Hassan, which suggest Greek Doric. The capitals were often surmounted by a square abacus, frequently of less width than the top of the capital

[1] The arch was used occasionally by the Egyptians in brick construction.

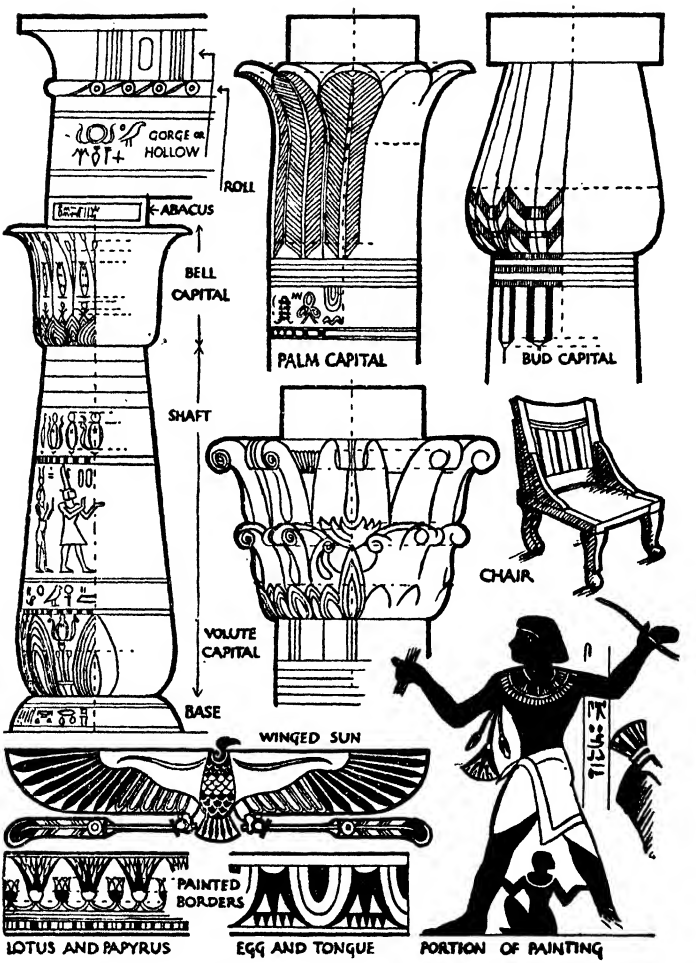

FIG. 6. DETAILS OF EGYPTIAN BUILDING

itself (Fig. 6). At first sight this may seem unsound, as the purpose of an abacus is to provide a broad and firm seating upon which the end of the lintol may rest. It will be noted, however, that where the smaller abacus occurs there is usually a pronounced coving finish to the capital, and that the abacus does form a real seating for the beam, lifted above the top of the shaft.

Lighting. Windows were very rarely used in the temples, and natural lighting was secured by slits in the clerestory walls. Slits were occasionally used in roofs as well as in walls for lighting. Doorways and windows were rectangular.

Decoration. In Egyptian temples the columns were an internal rather than an external feature, and this meant that the exterior consisted of walls, bare in form (Fig. 4). This bareness was broken by covering them with coloured decorations having an incised outline. The Egyptians were lavish with painted decoration (Fig. 6), and it occurs almost everywhere in their buildings. Walls, ceilings and even columns were covered with curiously flat and conventional treatment of figures and natural objects, combined with lettering, all painted in the simplest and brightest colours.[1]

The amazing thing about Egyptian Architecture is that it remained almost unchanged for a period of four thousand years. Changes did occur, of course, but it needs an expert to distinguish them clearly; and we are certainly justified in regarding it as one continuous style. We have already remarked that the Egyptians made use of the materials they had ready to hand; mud and reeds for the cottages, clay mud bricks dried in the sun for houses, and for their monumental buildings, the temples and tombs, masonry on the most colossal scale.

[1] There were exceptions to this rule, notably in the reign of Akhenaton (1375–1358 B.C.).

CHAPTER IV

BUILDINGS OF THE ANCIENT WESTERN ASIATIC PEOPLES: BABYLONIA, ASSYRIA, AND PERSIA

While the Egyptian civilization was flourishing along the banks of the Nile, another civilization had arisen along and between the twin rivers having their outlet in the Persian Gulf—the Tigris and the Euphrates. This was the civilization of Ancient Babylonia. Since then, the mud and silt brought down by the rivers have constantly pushed the coastline further to the South. This mud and silt provided the ancient Babylonians with excellent crop-bearing soil, and with the raw materials for the sun-dried bricks with which all their buildings were erected. A very fine system of irrigation between the two rivers made their land extremely fruitful. There were, however, marshy tracts which were very unhealthy, and were the breeding grounds of many poisonous and disease-bearing insects, especially after the period of heavy rains.

Why the Babylonians Built on Artificial Platforms. The climate was hot, and this, together with the desire to avoid the unhealthy vapours from the drying marshes, and the worst of the insect attacks, caused the Babylonians to build their towns upon artificial elevations or platforms, there being no hills. Also it may be that building on these mounds provided defence against both man and beast.

The Social Structure. The Babylonians had reached an advanced stage of civilization, and their social life was highly organized. They had a code of laws with detailed rules for social conduct and behaviour. The towns possessed postal services and police forces. In the main the Babylonians were a commercial race.

To the North arose a more active and warlike people, the Assyrians, It is likely that living was harder in the North. Whereas the Babylonians were ruled very much by the priests and soothsayers, who were for the most part scholarly and cultured, the Assyrians were ruled by warlike kings with

great dreams of conquest. Thus the social life tended to be that of the corporate state, with the strict division of soldiers and workers. Slavery existed in both civilizations, but with their frequent wars the Assyrians had many prisoners who provided a constant supply of slaves. The Assyrians were a cruel and hard people; eventually they subdued and ruled over the whole of what was previously Babylonia. There was almost constant war between all the peoples of the Middle East.

On the high tablelands of Persia arose yet another powerful race, the Persians. Their military organization was superior to that of the Assyrians, and they conquered the whole of the Middle East and penetrated deeply into India and Europe. They too were a warrior nation; the mere fact of their far-reaching campaigns led to a knowledge of other nations' culture and craftsmanship, and much of the wisdom and skill of other countries was imported. Persia had a more pleasant climate generally than those countries in the basin of the Euphrates, although there was much variation. There was more diversity of building materials, too, and wood and stone were available in greater quantities.

Religion. The religion of these peoples shows a gradual development of ideas built up generally on the conflict between good and evil. It did not take up their life and outlook in the same way as did the Egyptian religion. Even though the priests were so important in the Babylonian era, they occupied themselves very much with the pursuit of learning and the government of the people.

Building Materials. We have noted that the main building material of the Babylonians and Assyrians was the sun-dried brick.[1] These bricks would not resist continuous rain, and they had to be preserved by means of a sheathing of material which could withstand water (Fig. 7). The Babylonians used glazed tiles for this purpose, while the Assyrians used large but comparatively thin sheets of stone. Examples of both of these protective coverings may be seen at the British Museum. As a mortar or cement, they used pitch which was obtained from the bitumen springs at It on the Euphrates. This was also used as a roof waterproofing, and it is likely that some

[1] It is likely that the process of making the bricks permanent by kiln firing was known, but there was a great shortage of fuel.

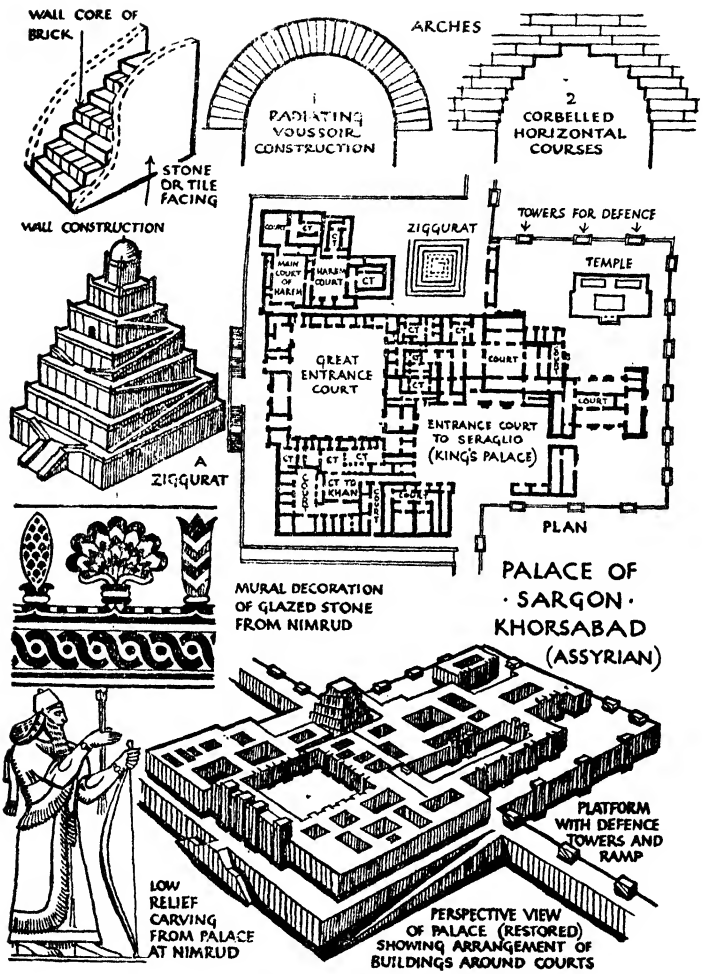

FIG. 7. WESTERN ASIATIC BUILDING

walls were similarly treated where tiling would have been too expensive.

Use of the Arch. With large units of building material, such as the Egyptians were able to use in their temples, the trabeated method of dealing with openings is the obvious solution. When the units are small, however, as in the case of sun-dried bricks, a different construction must be employed. The solution of this problem is the arch. How and when the arch originated is not known, but once discovered its future employment would be certain. We find evidence of its use in Egypt in connection with sun-dried bricks. In Western Asiatic building we find it employed for almost every opening, because the builders lacked every other means of bridging a span in the Babylonian and Assyrian periods; these builders used both corbelling and voussoir construction in making their arches (Fig. 7).

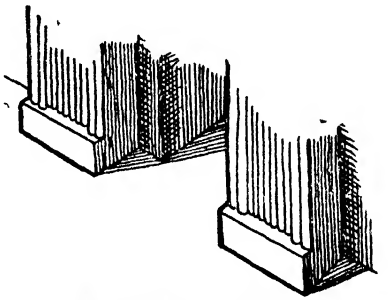

FIG. 8. ALTERNATE ADVANCING AND RECEDING WALL WITH VERTICAL BANDING

Roofing and Planning. The use of the arch would naturally lead to its adoption as a means of construction in roofing, where barrel-vaulting would be employed. This caused long and somewhat narrow divisions in planning (Fig. 7). There is reason to suppose that dome construction was known, although it is likely to have been used to cover only small areas.

Tile and Stone Sheathing. As we have seen, the walls were built of sun-dried bricks with a protective sheathing which would resist the action of water. Tiles were mainly used by the Babylonians, and were decorated with patterns of quite bright, rather "liquid" colours, while the slabs of stone that the Assyrians employed were decorated with vigorous, crisp, and almost realistic low relief carving (Fig. 7) of battle and hunting scenes.

Walls. A feature of the design of the walls was the alternate advancing and receding of the main mass of the external wall,

while its surface was broken in a somewhat similar way by vertical banding either (in plan) repeating semi-drum shapes, or advancing and receding planes (Fig. 8). The top of the wall was finished in the case of large buildings by a peculiar type of battlement cresting (Fig. 9).

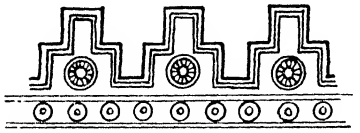

FIG. 9. BATTLEMENT CRESTING

Babylonian Buildings. In Babylonia would have been found large houses and palaces for the wealthy and important inhabitants, large administrative offices and commercial establishments, shops and workshops, and various dwellings diminishing in size as one descended the social scale.

Ziggurats. We would also have been struck by the appearance of large towers with a rather pyramidal general outline, caused by the diminishing area of each successive floor (Fig. 7). These were called *Ziggurats* and were the temples used by the priests and astrologers who, from the top, were able to make observations of the stars. (The word "Ziggurat" means "Holy mountain.")

Assyrian Buildings — The Palace. In Assyria the most impressive building was the palace of the king (Fig. 7). It was so built to impress the ordinary people with their ruler's importance, but it was also the centre of all activities, and was the headquarters of administration and the army. Flanking the main entrances were huge sculptured lions or monsters (Fig. 10).

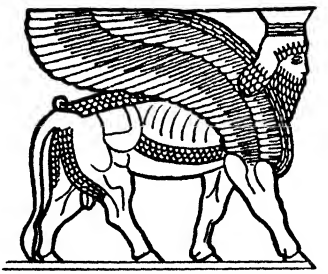

FIG. 10. SCULPTURED MONSTER TO FLANK ENTRANCE TO PALACE

Persian Building. In Persia was a medley of building styles, with influences from Assyria, Egypt, India and Greece. Stone, or sun-dried bricks, and timber were used, and the walls were decorated with extremely beautiful glazed tiles. One of the best known examples still in existence is the lion frieze from Susa (Fig. 11).

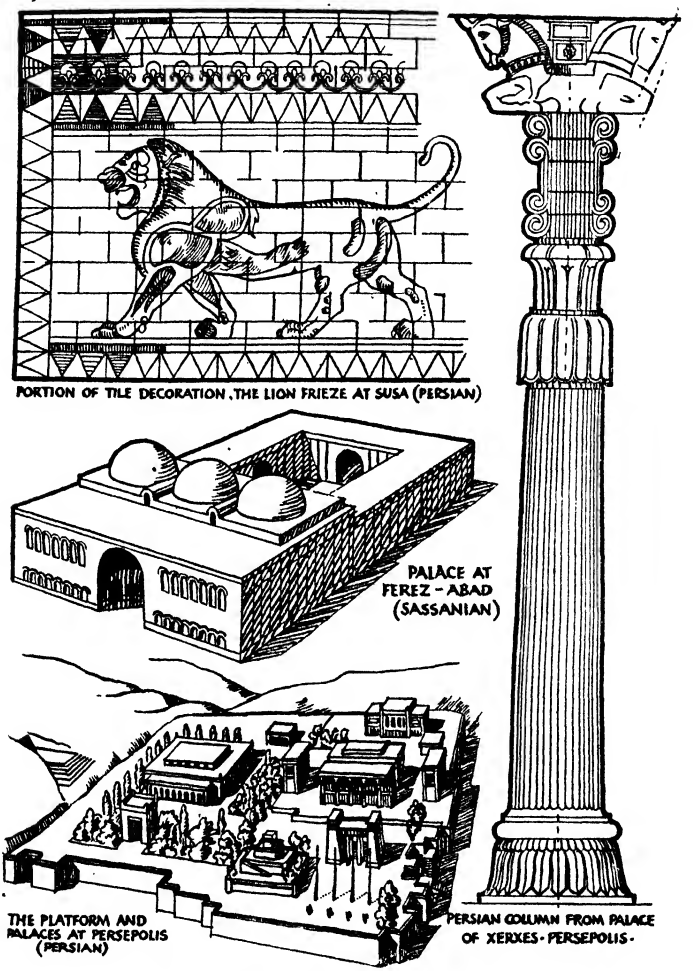

FIG. 11. WESTERN ASIATIC BUILDING

Persepolis. An outstanding work of Persian architecture was the platform of palaces at Persepolis (Fig. 11). A huge area is covered by this platform, which is partly artificial and partly natural; on it were built many palaces and other important buildings. A feature is the employment of the column, especially in the hypostyle hall of a hundred columns.

Persian Column and Capital. The Babylonians and Assyrians employed the column, if at all, only for very small buildings, such as summer-houses; but the Persians used it extensively, and designed a very distinctive form (Fig. 11). Finishing at the top in a kneeling animal's head and forequarters, the capital continued with a form reminiscent of the Greek Ionic volute put up endways and doubled; under this the capital terminated with bold mouldings. The base was designed to match these and the shaft was long and slender. The slender proportions could be used with safety as the roof to be supported was mainly of timber and was therefore much lighter in weight than the roofs of the Egyptians.

Ornament. Ornament was used to emphasize features such as an entrance or doorway, whereas the Egyptians seemed to spread it all over the building.

Seleucid and Sassanian Building. The Persian architecture was followed by that of the Seleucids and Sassanians (312 B.C.–A.D. 642), which is chiefly of interest because of its bold use of the dome, and because it forms a continuation between the Assyrian and the Byzantine styles. Particularly was this the case during the Sassanian dynastic period (A.D. 226–642).

The buildings were chiefly of brick and a hard form of mortar. Their external appearance was mainly eastern in character (Fig. 11), but there were occasionally examples which were influenced by Roman architecture, expecially in those buildings which showed successive horizontal stages of "orders" up the wall surface.

SECTION III

GREEK AND ROMAN BUILDING

We now come to what is known as *Ancient Classic* Architecture. Its influence on European architecture has been immense, and wherever we look to-day we can see the effect. Its qualities are those of ordered symmetry, and of studied care with every detail of proportion. Each detail has its part to play in the design of the whole, and is devised with this end in view. This statement does not mean that Classic Architecture is standardized in design, or that the student should memorize impressive lists of proportions. It does mean that his studies should lead him to acquire a deliberate and unfailing sense of what is right and suitable in proportion. One has but to examine a few examples to find the variations that existed. Yet at the back of these is a consistent idea, and it is this idea that the student should strive to comprehend and appreciate.

CHAPTER V

GREEK BUILDING

Geography and Climate. Greece is a country very much broken into small areas by long ranges of mountains with plains intervening, and as might be expected from this type of surface contour its coastline is equally irregular and broken. Classical Greece extended much farther than the Greece of to-day; it included parts of Asia Minor and there were colonies in the south of Italy and Sicily and on the North African coast. The islands of the Aegean, and Crete, also belonged to Greece. The climate was more temperate than in the countries we have previously considered, and we have here a civilization based chiefly on the sea and small plains watered by mountain streams.

History. The earliest civilization, known as the *Minoan* from the legendary King Minos, may be studied from the remains found particularly in Crete. Another name given to this civilization is the *Aegean*. Successive invaders from the north pushed their way down into Greece, and, as a result, the artistic level was gradually lowered through many centuries; then at last a new civilization arose, which expressed itself in the earliest Doric temples about 650 B.C.

The Greeks were formed into a series of separate clans, provinces, or communities, occupying various parts of the country. There was a clear understanding amongst the clans of the need for unity, which was, in some measure, expressed by the annual meetings for the Olympic Games, but there was also constant internal rivalry, strife, and conflict. A certain degree of co-operation amongst these groups was secured against the Persians, whose incursions into Europe were ended by Greek victories. It was largely to celebrate these victories that the fine buildings of the Acropolis were erected at Athens, the success having been achieved under Athenian leadership. Then came the tragic Peloponnesian war and the ascendancy of Sparta. Eventually, under Philip, the Macedonians secured supremacy, but after the death of his son, Alexander the Great, the country split into its

separate provinces and city states, and they fell an easy prey to the organized power of Rome, of whose empire they were now to form a part.

Religion. The Greek religion was based largely on nature and on human activities, and each was epitomized by a god or goddess. There was the goddess of Victory, Nike; the god of the sea, Poseidon; of peace and plenty, Athena; and so on. At the head of these was Zeus, the great ruler of all.

FIG. 12

Religion belonged to the whole people, and the priesthood did not form a separate class.

Social Structure. The social life varied somewhat from state to state. The Athenians appear to have gone some distance along the road to democracy, though most of their ideas were limited to the rights of "free" men. In Sparta, there existed a most rigid form of the corporate state; yet there was a very great advance in the general outlook as compared with Egypt and Assyria. The Greeks were enterprising and courageous, and were conscious that their destiny was bound up in their sea power. They founded colonies in Asia Minor, in southern Italy, in Sicily, and on the northern coast of Africa. They were traders and a great commercial people.

Their love of natural beauty was expressed in many ways, by their national games and contests; and their sculpture, and activities in other cultural realms, such as music, poetry, and the drama, are well known. It is sad to reflect that these achievements went on side by side with the most sordid political crimes and treacheries. Yet the Greeks were young in experience, they were finding their way along new paths, and by their achievements they have left us a very great heritage.

Building Materials. It has been indicated that much of the character of classic architecture lies in its nicety of detail in proportion to the whole. This refinement would follow, to a large extent, from the fact that a people with the national characteristics of the Greeks were using, for their best building work, a material capable of great exactness in working. The material was marble, of which there was a most generous supply waiting to be quarried from the mountain sides of their own country. Where marble was not easily available, other stone was used; even in the temples, where it was finished with a marble stucco so that the same perfection of detail could be secured. This was done particularly in some parts of southern Italy and Sicily. Timber was available, although its use was limited to those purposes for which it is peculiarly adapted, such as floors or in the construction of roofs. Bricks were also used, sun-dried for the most part, with probably a skimming of burnt bricks to resist weather conditions externally. It is likely that most of the workmen's houses were of less enduring materials, such as rammed earth, or reed and mud.

Early or Minoan Period. The excavations at Knossos in Crete have taught us much about the early Minoan work. The plan of the palace of King Minos shows us many long and rather narrow rooms arranged irregularly around courts of various sizes. These would seem to indicate the employment of barrel-vaulting for roofing. A great degree of luxury was achieved; there were bathrooms, mural decorations (Fig. 13), and elaborate floor decorations. A stone throne that was discovered (shown in the same illustration) is very interesting, as it is clearly a type of wood construction copied in stone. The treasury of Atreus at Mycenae is another extremely interesting example (Fig. 13). The columns in Minoan

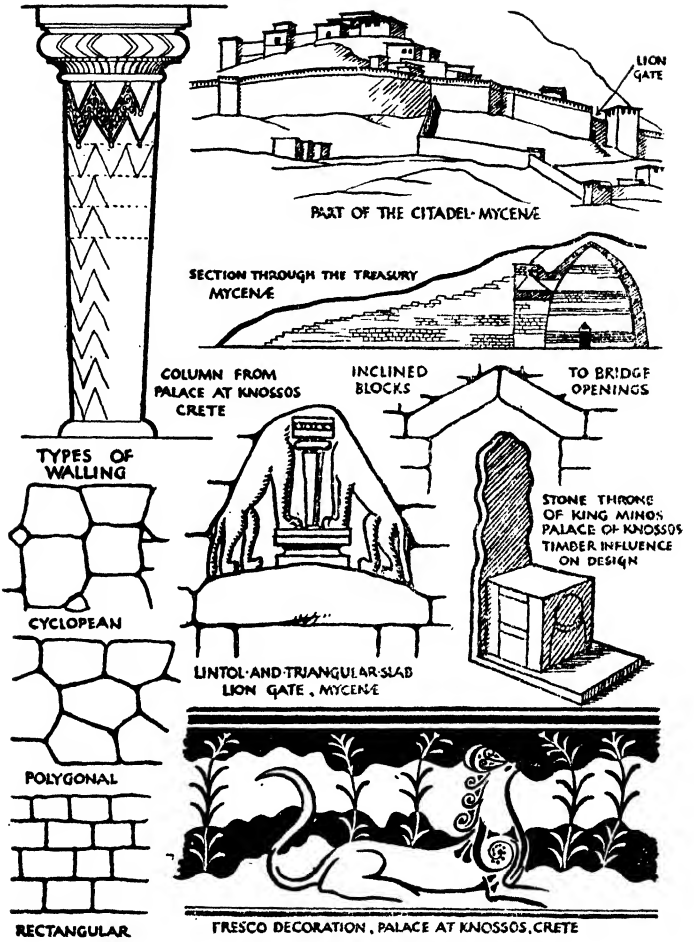

FIG. 13. EARLY GREEK (MINOAN) BUILDING

architecture (also shown in Fig. 13) are very distinctive, having a capital rather like the Doric; often there is no base, and the shaft decreases in width as it descends. Masonry was the regular way of building in early Greece. Generally, it showed less skill than that of the Egyptians. There are three main types (Fig. 13), (1) the cyclopian, (2) the polygonal, and (3) the rectangular. Very large blocks were sometimes used, as in the lintol over the gate of lions at Mycenae which is 16 ft. long, 8 ft. wide and 3 ft. in thickness. A method sometimes employed for bridging an opening was to incline two blocks to form a ridged or pointed heading (Fig. 13).

CLASSIC GREEK ARCHITECTURE

We must now consider the Greek period proper, the *Hellenic* period as it is often called. The principal Greek works, whose remains we may study to-day, comprise temples, monuments and tombs, market-places and public buildings, theatres, stadia and gymnasia.

Temples. The temples (Fig. 14) are, with very few exceptions, quite regular and symmetrical. They are usually rectangular. In the centre was the *naos* or sacred place containing the altar. This was normally surrounded by a colonnade—sometimes a double colonnade. In small examples the colonnade was at one narrow end only; in others, at both narrow ends. Distinguishing names are given to denote the number of columns at the ends. *Di-style* means two columns, *Prostyle* four columns, *Hexastyle* six columns, *Octostyle* eight columns, *Nonostyle* nine columns, *Decastyle* ten columns. The term *Peripteral* means that columns surrounded the building. A great difference between the Egyptian temple and the Greek was that the former had columns on the inside, and the latter on the outside. The Greek temple was much simpler, and there was not the same mysterious penetration to the Holy of Holies. The roof was ridged and of low pitch. The timber rafters were supported by the *naos* walls, and sometimes by columns rising from inside the *naos* as well, and they were covered by thin marble tiles.

Let us summarize the external appearance of a typical temple (Fig. 14). Standing on a stepped rectangular stone or marble foundation which rises well from the ground, and is known as the *stylobate*, a row of columns follows the

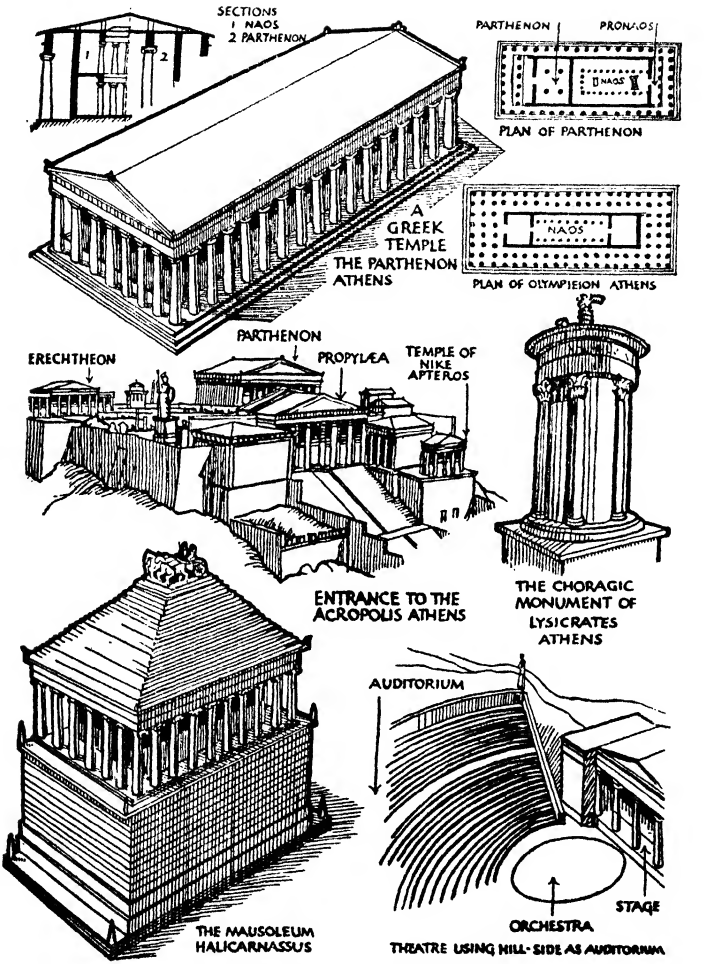

FIG. 14. GREEK BUILDINGS

rectangular shape. These columns will be in one of the three Greek Orders, to be discussed later. Bridging the columns, and again following the rectangular shape, is a mass of masonry known as the *entablature* (Fig. 15). This is divided into three horizontal parts, the two lower being on almost the same vertical plane. The horizontal part immediately above the columns is the *architrave*, and above this is the *frieze*. They are surmounted by the *cornice*, which gives a clear and distinct finish to the block mass of the building.

At the narrow end, over the entablature, is the triangular shape formed by the end of the ridged roof, known as the *pediment*; this consists of a central panel called the *tympanum*, usually filled by a sculptured decoration and the cornice which is continued along the edges of the slope, to meet at the ridge. Between the columns can be seen the walls of the *naos*. Such a shape suggests an origin from a timber-built hut, using tree trunks where columns now stand, and the entablature formed by the pieces of timber upon which the roof may be laid.

Monuments. Of monuments, the Choragic Monument of Lysicrates (Fig. 14), and the Tower of the Winds are charming and typical examples. Both are at Athens. Another well-known example is the Mausoleum at Halicarnossos (Fig. 14).

Theatres and other Buildings. The theatres (Fig. 14) were semicircular in plan, often utilizing a hillside to form the amphitheatre. A large stage wall was built facing this, and the stage erected in front. Market-places and other public buildings were designed to suit their purpose, and the more pretentious houses were no doubt built very similarly to those of Pompeii (Fig. 21), of which they were probably the prototypes. In all these buildings the main feature was the colonnade. Bright sunny weather, with occasional rain, dictated the provision of a place which could be used as a shelter from heat or shower, and the Greeks delighted to conduct their affairs in the open as much as possible. As we have remarked, the columns would be in one of the three orders, Doric, Ionic, or Corinthian. It is now convenient to discuss these and to give as typical an example of each as may be found, with suggestions showing how each was varied in detail.

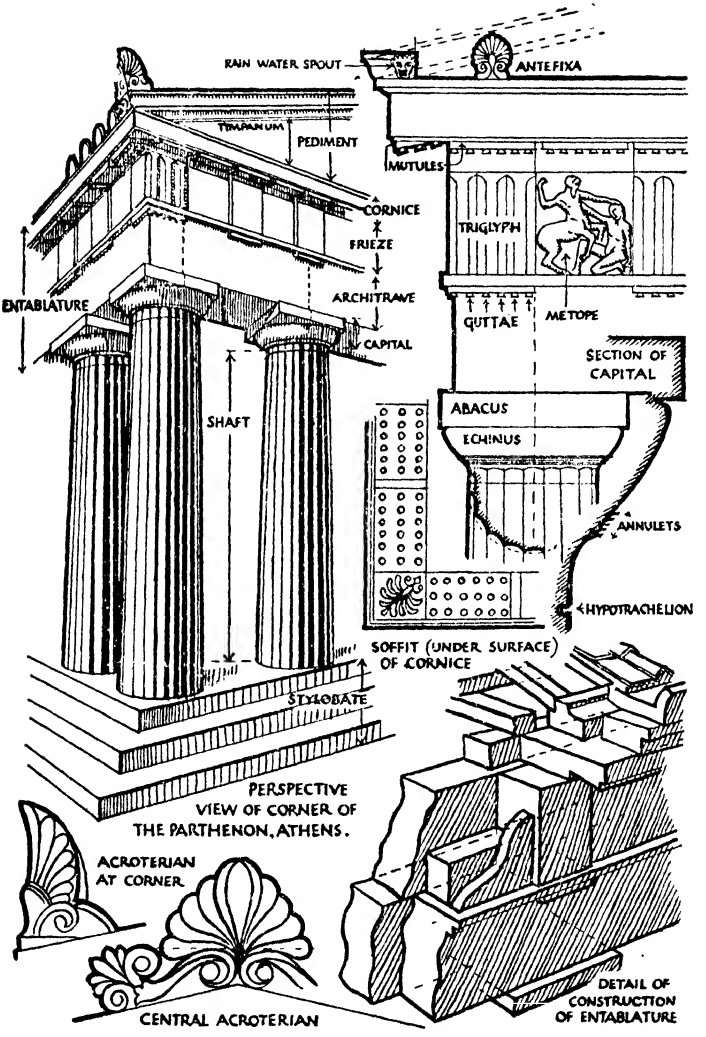

FIG. 15. THE GREEK DORIC ORDER

THE GREEK ORDERS

The Doric Order. The Doric Order (Fig. 15) is the earliest and the heaviest in proportion. It was used chiefly between the years 700–300 B.C. The earliest examples are the most sturdy, the height of the column being only four times the diameter at the base, while in later examples this diameter may divide into the height as much as six and a half times. The stylobate consists of three steps, and upon this stand the columns, which have no bases. The circular shaft is fluted with concave hollows meeting at a sharp edge, the usual number of flutes being twenty, although there are cases where as few as twelve are used. There are examples in which sixteen, eighteen, and twenty-four flutes may be found. The shaft diminishes at the top to between two-thirds and three-quarters of the diameter at the base. Every shaft has what is known as an *entasis*; this is a refinement of shape which consists of bulging the outline of the tapered shaft in a convex manner as it ascends. Strange as it may seem, this is done in such a way as to be imperceptible unless one knows of the device; actually, by its use, the column looks straighter and stronger than it would otherwise have appeared. There were many somewhat similar devices used by the Greeks.

The capital consists of two main parts, an echinus mould following the circular shape of the shaft section, above which is the abacus, square in plan. Upon the abacus rests the architrave. The meeting of the shaft and the echinus mould is enriched by a system of annulets, varying from three to five in number, on the lower part of the echinus. Just below this, and on the shaft, there are three grooves in early work, and one groove in later examples.

The design of the cornice and frieze in the Doric Order is a very fine example of the selection of detail so as to produce unity in the scheme of design. The cornice projects strongly and in its vertical part consists, from the lowest part upwards, of a plain surface with a small mould above. A bolder *cyma recta* completes the cornice. Under the tympanum, however, this mould is omitted, thus avoiding too great a break between the entablature and the pediment.

The great triumph of design in this Order starts with the underside or *soffit* of the cornice. This surface is not horizontal, but is inclined upward in an internal direction. The soffit

consists of projecting panels called *mutules*. Into these are studded eighteen "pegs" known as *guttae*, arranged in three rows of six. The width of the alternate mutules projects downward on to the frieze to form the *triglyph*. Under the centre of every other triglyph is placed the column. Thus, if we know the width of the triglyph we may easily obtain the approximate inter-columniation. The width of the triglyphs or of the mutules is determined from the capital. This, as we shall learn, does not apply to the corner column, for the triglyph at the corner is not placed centrally with the column, but occupies the space from the corner of the entablature to a line projected from the centre of the column. The triglyphs extend a little below the mould which separates the frieze and architrave, and are finished by rows of six guttae. The spaces on the frieze are called *metopes*, and often contain low relief sculptures. At the four corners over the cornice are placed ornamental pieces of stone with a honeysuckle design upon them. An even larger piece was placed at the crest of the pediment, and these blocks were known as the *acroteria* (Greek: summit or extremity). The Orders are often measured by means of a proportional scale, which is based on the radius of the column at the base. This is known as a *module*, and is in turn divided into thirty divisions known as *parts*. A rough proportioning of a typical Doric Order would give the column as eleven modules, and the height of the entablature at the side as four modules divided into three almost equal parts, the frieze being slightly larger and the cornice slightly smaller than the architrave.

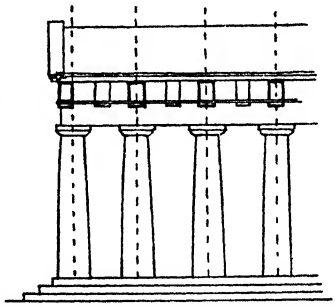

FIG. 16. RELATION OF TRIGLYPHS AND INTER-COLUMNIATION (GREEK DORIC ORDER)

It may have been noticed that the relationship of triglyphs to inter-columniation results in the corner column being closer to its neighbour (Fig. 16). In viewing a temple from the front, the background to the corner is the bright sky, and the effect of this is to make the space look larger than is really the case.

For the same reason, the corner column is often more sturdy, as the brightness of the sky behind would tend to make it appear narrower. This is another of the devices in Greek architecture to overcome accidental interferences with the effect that was desired.

Origin of the Doric Order. There has been much speculation as to the origin of the Doric Order, particularly as to whether it is a lineal descendant of a wooden building. Evidence advanced in favour of this idea consists in the details of the entablature, particularly the arrangement of the architrave and the triglyphs which are held to represent the cross-beam and the ends of beams resting on this. The mutules suggest the ends of sloping roof rafters, and the guttae would seem to indicate wooden pegs. Opponents of this theory point out that wooden posts would have suggested lighter columns, and that the echinus mould in the capital is one much more easily worked in stone than in wood.

The Ionic Order. The Ionic Order (Fig. 17) appeared about 550 B.C. The width of the column at the base of the shaft is about one-ninth of the height of the entire column—including the capital, shaft and base. The shaft has an entasis, diminishes in width as it ascends, and usually has twenty-four flutes. These are separated by a fillet, and do not come to a sharp edge as does the Doric. The circular portion of the shaft finishes at the top with an *ovolo* mould, usually with egg and tongue enrichment. Below this is often a band of honeysuckle ornament. This forms a miniature capital to the shaft, but overlaying this is the characteristic voluted cushion of the Ionic capital, which is often less in width than the shaft but extends boldly on either side; the centre of the volute is roughly in line with the shaft seen from the front, although there are many cases where it is wider than this. The abacus is usually rectangular, but in every case follows the shape of the voluted cushion.

The normal treatment of the Ionic capital is such that the volutes show from the outside of the building, so that between the columns one sees only the end of the cushions. But this presents a problem at the angle of a building where two adjacent faces appear in elevation. The answer lies in the treatment of the corner capital. Here the volutes appear on the adjacent faces, and at the corner the volutes are curved

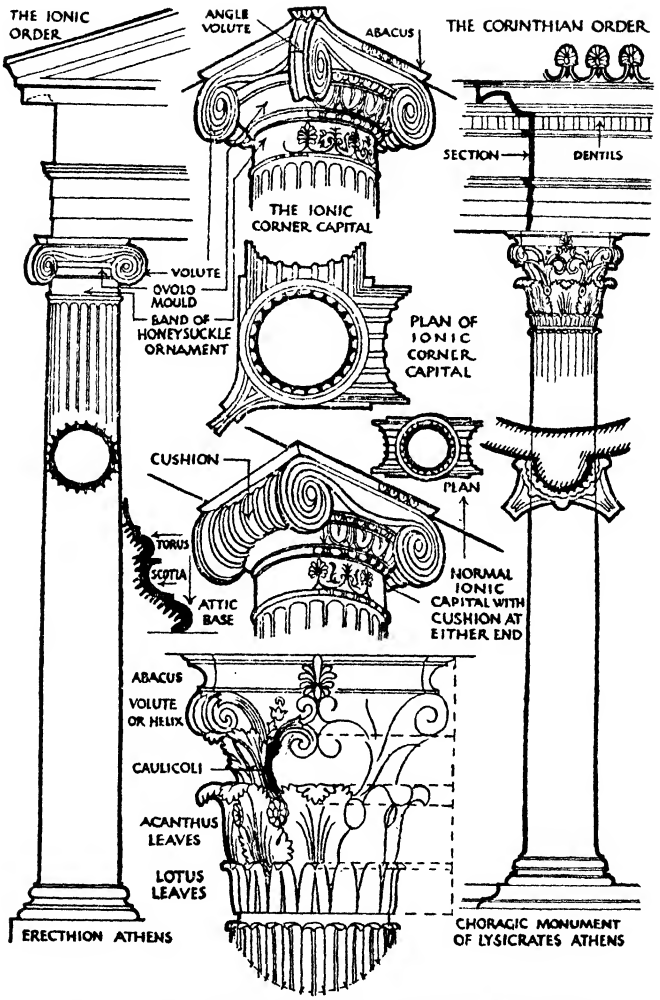

FIG. 17. THE GREEK-IONIC AND CORINTHIAN ORDERS

outwards until they lie in the same plane diagonally. Sometimes this treatment of the volute form is applied to each of the four sides; in this case the problem does not arise. These details of design may be grasped easily by reference to the illustrations (Fig. 17), and it is important that they be realized.

The Ionic Order possesses a base consisting usually of a *scotia* between two *torus* moulds and is known as the *attic base.* The subtlety of these moulds should be appreciated, for each member finishes on a wider circumference than that on which it started. Thus the general line of the base widens as it approaches and joins on to the stylobate, forming a firm footing.

The entablature is about one-fifth of the height of the column. The architrave is usually divided into three vertical planes successively stepped a little outward. A small moulding is placed between the architrave and the frieze. The frieze often carries low relief sculpture and is continuous; it is not broken by the triglyphs and metopes so typical of the Doric. In some examples we find the frieze omitted. The cornice follows much the same line as in the Doric. There are, however, no mutules or guttae. Occasionally a band of dentils occurs, and these are made into a very strong feature when the frieze is omitted. The treatment of the cornice and pediment is the same as in the Doric Order.

Origin of the Ionic Volute. The origin of the Ionic volute may be traced back to Egyptian work. Essentially, of course, the Ionic capital is based on a bracket form, and the volute would seem a very obvious way of finishing this. The spiral form occurs frequently in nature: ram's horns, shells, and the ends of fern leaves would make the beginning of a very long list. It is a form which lends itself to a great variety of treatment in decorative work, and it was used frequently in the Aegean period.

The Corinthian Order. The Corinthian Order (Fig. 17) was used less frequently than the Doric or Ionic by the Greeks. It is lighter than the Ionic, the diameter of the shaft at the base dividing into the total height of the column about ten times. In the main it is very similar to the Ionic, so that the entablature, shaft and base need only the comment that, while the same general form is maintained, there is a greater use of enrichment mouldings.

The important distinguishing feature is the capital, which is much deeper than those of the other two Orders. Examples vary considerably, but the outstanding features are (*a*) the use of the acanthus leaf in successive stages, and (*b*) the brilliant way in which the circular section at the base is often made to develop into the concave square section of the abacus. The fabled origin of the Corinthian capital was that its first designer was inspired by the sight of a Corinthian maiden's grave, upon which was a basket with a tile placed over the top; around this grew acanthus leaves and stalks with volutes at each corner.

One of the most beautiful and typical capitals is that of the Choragic Monument of Lysicrates at Athens (Fig. 17). Viewed from the front it is contained roughly in a square, though the tip of the abacus extends beyond this on either side. The height of this square may be divided into two equal parts, the lower of which contains two tiers of leaves, the bottom tier occupying about a third of the height, and being about equal to the thickness of the abacus. The upper tier of eight leaves is thus larger and it is only these that are of acanthus form, the lower tier of sixteen being lotus leaves. In many other examples of capitals the leaves are more equal in size and are all acanthus. The leaves follow the bell shape so typical of the Corinthian capital. Above the tiers of leaves spring eight scrolling stalks (called *caulicoli*) which meet in pairs under each corner of the abacus, where they form a volute. The space between the adjoining volutes is filled by a pair of counter spirals, and above this is placed a honeysuckle ornament which extends on to the abacus itself.

The Romans adopted these Orders from the Greeks, modifying and adapting them to their own use; they introduced two variations, the *Tuscan* and the *Composite*. We will deal with the Roman Orders after a discussion of Roman building.

CHAPTER VI

ROMAN BUILDING

ROME is on the Italian peninsula—see map of Roman Empire, (Fig. 18). The first step in the Roman advance was to gain control of this territory which occupies such a central and commanding position in the Mediterranean. The country is mountainous, but is not so broken into separate natural parts as is Greece; unified central control was therefore comparatively easy. The peninsula has a varied climate, being naturally hotter in the south. At the period of its greatest power, the Roman Empire extended over most of the then known world. We would, therefore, expect changes in the building due to differing climatic conditions and the varying materials which would be to hand. Yet the Roman stamp is unmistakable, and their buildings are very similar wherever they are found. In its heyday Rome was a highly organized military power, under what was a comparatively strong central government. As in Greece, there had been an earlier civilization, the Etruscan, and there followed successive waves of invaders of lower cultural achievement. The history of the Romans is one of steady expansion by military means. Once the bitter struggle with the North African power, Carthage, had been finally settled in favour of the Romans, they extended their power until their empire included a large part of Europe, and all the borders of the Mediterranean and the Middle East up to the Euphrates.

Social Organization. The social organization divided the populace into three sections: (1) the ruling class (patricians), (2) the plebians, and (3) the slaves. Life was highly organized, the craftsmen worked at their trades, agriculturalists and farmers cultivated their land, and there was a large commercial class besides officials of the State; there was also the large standing army needed both to preserve internal order and to control the outlying parts of the Empire.

Religion. The "family" occupied a strong position, and the most important religious rites and customs were concerned with this influence. Most of the gods and goddesses were

adopted from the Greeks and given Roman names, but religion generally did not play a large part in the lives of the people; obedience to the Emperor and the State was considered the greatest of virtues.

Materials. The Romans had a wealth of building materials, and they showed extreme ingenuity in adapting them to their purpose. Marble, brick, stone, sand and gravel were to be

FIG. 18

obtained in great quantity; but the great engineering achievements of Roman building were due to the employment of concrete, especially in arched and domed construction.

Building Methods. There were many methods used by the Romans for building walls, arches, vaults, and domes, but the underlying idea is essentially the same. The skeleton work is in brick, tiles or stone, and the mass is composed of concrete with constant systems of bonding running through to strengthen and unify the whole. Details of these methods are given in the diagrams and illustrations (Fig. 19). Where plenitude of certain materials suggested their use instead of concrete, the Romans employed them. In parts of the Empire there were vast supplies of stone, and in such cases the builders

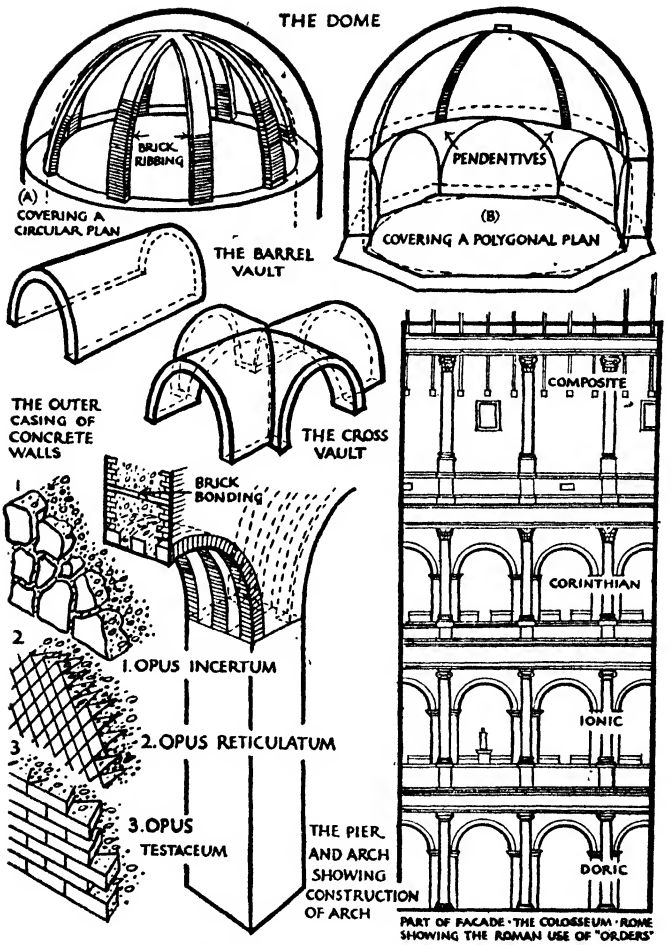

FIG. 19. CHARACTERISTICS OF ROMAN BUILDING

utilized both the material, and the traditional skill in masonry which were possessed by native populations.

Roman Buildings. A consideration of Greek architecture causes one to think mainly of temples, because it is from the remains of these that Greek building is chiefly judged. In the case of Roman architecture, however, the remains include a great variety of buildings—temples, baths, basilicas (halls of justice and commercial exchanges), forums (market-places), theatres, amphitheatres, circuses, tombs, triumphal arches, columns of victory, aqueducts, palaces, bridges, fountains, and many remains of domestic dwellings. The discoveries at Pompeii present a picture of Roman living at the height of their prosperity. We summarize here only the main points of these many buildings.

Temples. The Roman temples (Fig. 20) differed from the usual Greek temple in that they possessed a colonnade only at the front. This was developed into a portico to the main building which was enclosed by walls. Often the effect of columns was continued around these walls by attaching half-columns to their faces. The temple stood on a base generally rectangular in plan, and the entrance was approached by a flight of steps. There were also temples which were polygonal and circular in plan; the main entrance to these was usually marked by a projecting portico.

Thermae. Public baths—*thermae* (Fig. 20)—really formed a social centre or club, and they contained libraries, stadia, and theatres as well as all the auxiliaries of luxury bathing. The usual arrangement was a very large building, of which the swimming-bath was but a part. This was surrounded by gardens, the stadia, and so on, and the whole was enclosed by buildings, colonnades and apartments.

Basilicas (Lawcourts or Commercial Exchanges). The basilicas (Fig. 20) were important buildings and found a central position in Roman towns. They were normally rectangular in plan, and a special feature was the semicircular apse at one end; occasionally the apse was used at both ends.

Forums (Open Market-places). The forums—open market-places—were great squares around which would be sited many of the most important buildings. Colonnades were an outstanding feature.

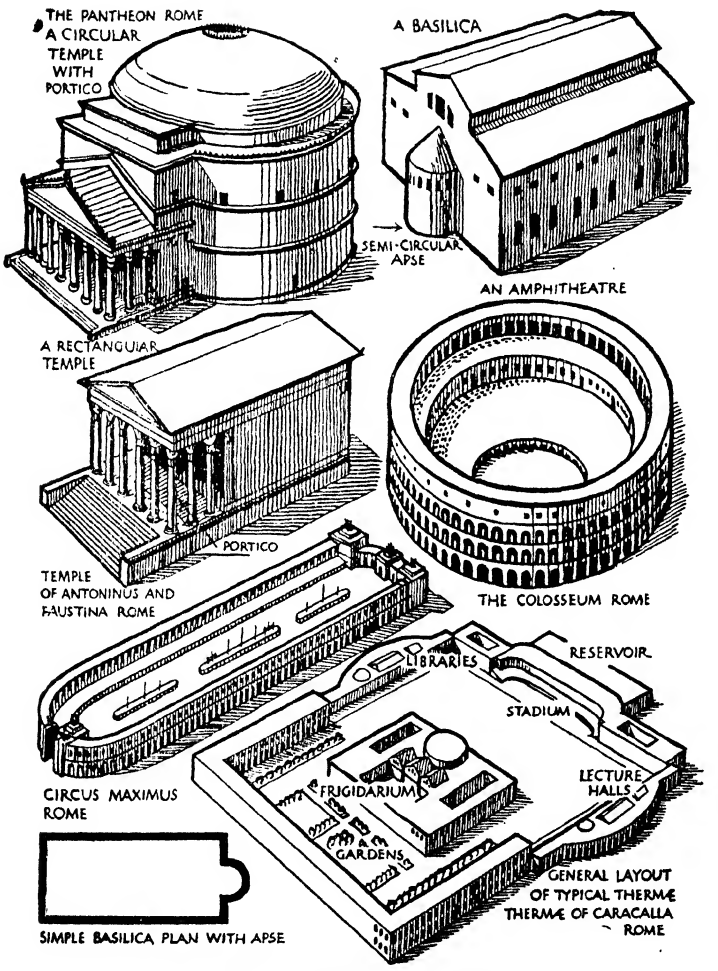

FIG. 20. ROMAN BUILDINGS

Theatres, Amphitheatres, and Circuses. Theatres (Fig. 20) were very similar in arrangement to those of the Greeks. The Romans, however, often built a concrete slope for seating, and underneath this were various rooms and shelters, The amphitheatre was a continuation of the slope to complete an ellipse which surrounded a large area. The circus (Fig. 20) was long in plan with semicircular ends. On either side was seating, sloped up to a high wall. Triumphal and processional arches (Fig. 21) formed a feature at the ends.

Tombs. There were many types of tombs. Some of the most impressive consisted of a squat circular tower resting on a square base. Upon the tower was a crowning feature of which statuary often formed a part. There were many tombs which were temple-like in character.

Triumphal Arches and Columns of Victory. The majority of the Triumphal Arches (Fig. 21) were rectangular in elevation and were either single or treble arched. They were enriched by attached columns and entablatures, with statuary and by low relief carving. Columns of Victory (Fig. 21) were erected in many of the forums to commemorate successes of arms and to pay a tribute to the Emperor under whom they were obtained. The columns usually stood on a roughly cubical base and they were crowned with a sculptured figure.

Bridges and Aqueducts. The Roman bridges and aqueducts (Fig. 21) were magnificent feats of engineering. The road- or water-way was usually carried across horizontally, supported by arches springing from piers stongly designed to carry the weight, and, where necessary, to resist the flow of water.

Palaces. Palaces were, as might be expected, vast and luxurious assemblages of buildings designed for the purpose of carrying on the intricate affairs of Court and State and also to express the power of the Emperor. They provided temples, basilicas, officials' and women's apartments, entertainment and banqueting halls, baths and galleries.

Fountains. Fountains were very numerous and were treated in a great variety of styles, the flat basin being the most typical.

Dwellings. There were a great number of varying types of domestic dwellings, but three may be noted.

(1) The large town house (Fig. 21). This opened from the street and there was little attempt to glorify the frontage,

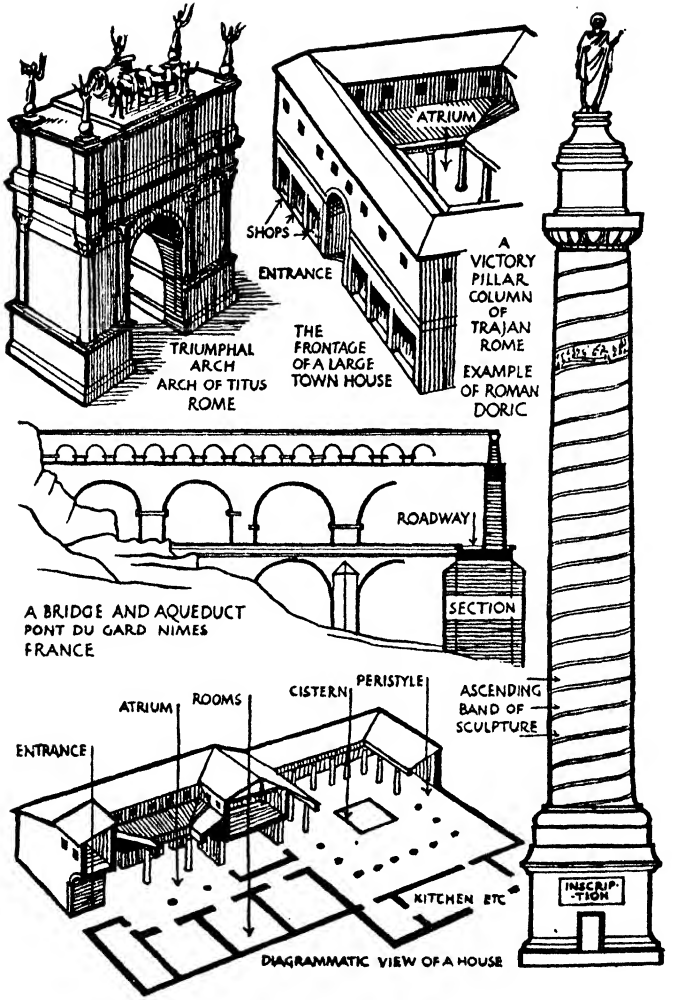

FIG. 21. ROMAN BUILDINGS

which was usually occupied by shops on either side of the entrance. The wall above continued upwards in a plain manner, there being rarely openings even for lighting. This wall space was often painted to advertise the shops below. The house itself contained one or more open central courtyards which had a shaded walk or verandah running around, often a continuation of the roof in the case of single-storied buildings.

(2) The large country house or villa. This was built much on the lines of the palaces, except that less space was given to requirements such as administrative apartments. A special feature was the gardens, which were magnificent in their layout.

(3) Workers' tenements or flat dwellings. These must have been necessitated in large cities by the absence of speedy transport and the insufficiency of space on which to erect separate workers' dwellings. It is interesting to note that buildings above 75 ft. in height had to be forbidden.

The Roman Orders. The Greek style was of essentially trabeated or "post-and-lintol" construction, the post being a "column" in the form of one of the three Greek Orders. In contrast, the Romans used the pier and arch, vaulting, and dome construction. The column was still used constructively in the building of colonnades and porticos, but to a large extent it was introduced as a decorative device to enhance the appearance of what were really concrete walls. Such buildings as the Colosseum (Fig. 20), and many of the triumphal arches illustrate this treatment. The use of superimposed orders, so typical of the treatment of Roman façades, is shown especially in the Colosseum.

The Romans adopted the three Greek Orders, altering them to conform to their own ideas, and also devised two new types; the *Tuscan*, probably derived from the native Etruscan architecture and somewhat comparable with the Doric, but simpler and lighter in proportion; and the *Composite*, the capital of this being a combination of the Ionic and Corinthian, in which the top of the Ionic shaft and the capital emerges through the double ring of acanthus leaves so typical of the lower half of the Corinthian. The chief feature of the Roman Orders may be summarized as follows—

Roman Doric. The Roman Doric Order (Fig. 22) was little used by the Romans. The column was placed upon a pedestal,

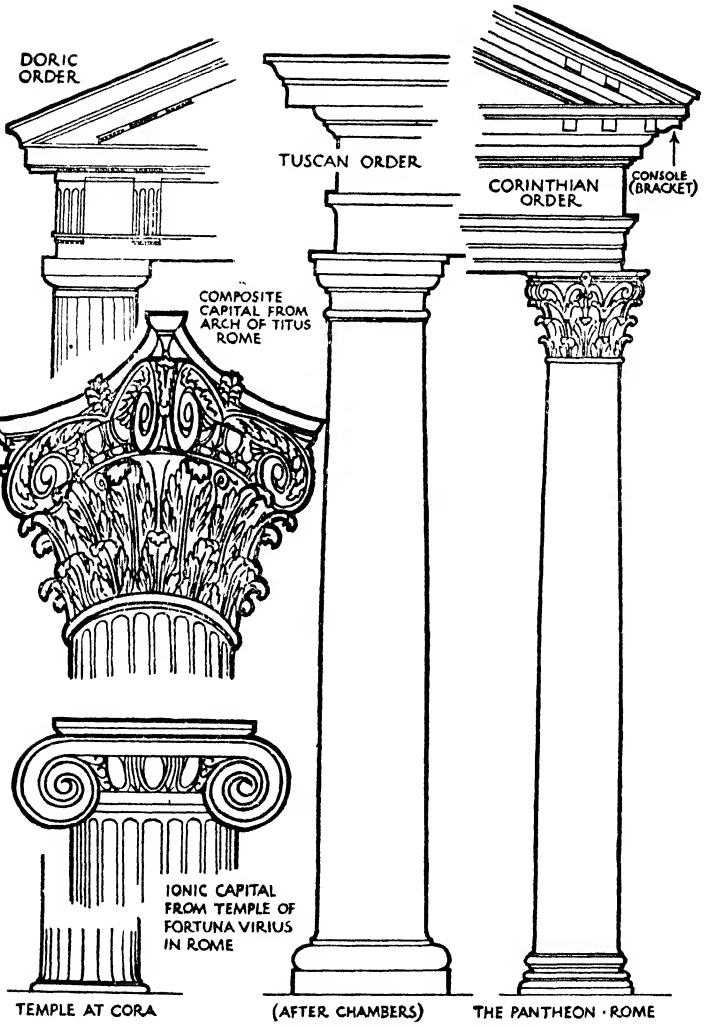

FIG. 22. THE ROMAN ORDERS

a base was added, and the shaft was often unfluted. It was much lighter than in the Greek Doric, its height being about nine times its diameter at the base. The entablature was lighter and was about one-sixth of the height of the column. There was not the Greek subtlety of design in the frieze, the triglyphs often being omitted owing to the difficulty of arranging them to be over the centre of each column. The mutules were much less marked in the design of the cornice, where a dentil course was sometimes introduced. The architrave was usually very shallow.

Roman Ionic. In the Roman Ionic (Fig. 22) there is not much difference in general proportion from the Greek. A tendency to a lighter treatment is accompanied by a much more lavish use of ornament. Particularly is this the case with the entablature, and especially in the cornice. Some later examples have the volutes on all four sides of the capital.

Roman Corinthian. The Roman Corinthian (Fig. 22) was a favourite order, as it conformed to the Romans' ideas of proportion and of decorative value. It is treated most elaborately, although the shaft is often unfluted. The acanthus leaves are treated much more naturally than in Greek examples, as is typical of Roman decoration generally. A new feature on the cornice is the use of *console brackets* under the *corona* moulding.

Roman Tuscan. The entablature of the Roman Tuscan Order (Fig. 22) is from one-fourth to one-fifth the height of the column. As in other Roman orders, the cornice is large in comparison with the frieze and architrave. The typical feature of the simple capital is the necking band. The shaft is not fluted, and the height of the column is about seven times its diameter.

Roman Composite. With the exception of the capital which has been described, the Roman Composite (Fig. 22) is similar to the Roman Corinthian. It is often not considered as a distinct or separate order, but regarded as a somewhat impure type of Corinthian.

CHAPTER VII

EARLY CHRISTIAN, BYZANTINE, AND ROMANESQUE BUILDING

Decline of the Roman Empire. A gradual decline in the fortunes of the Roman Empire commenced shortly after the year A.D. 100 The secret of its success had been its strong central government, but dissensions and popular discontent allied to the love of luxurious and lazy living with a consequent decline in initiative, had weakened this strong centre of power, and disorders and mutinies were rife. These coincided with another series of inroads by barbarian races moving eastward into Europe, and attacking from the north and east. Eventually the Empire was reduced to the land bordering the Mediterranean eastward from what is now the South of France to Egypt.

Byzantium. By the loss of Central and Western Europe a central position geographically was no longer enjoyed by Rome, and in A.D. 324 Constantine took the important step of transferring the capital and the seat of government to what is now called Istanbul, but was, until a few years ago, known as Constantinople, after Constantine. In the days which we are considering the name was *Byzantium*.

The new capital was laid out as befitted its importance with numerous forums, a great palace, and a Hippodrome to take the place of the Colosseum; it was known as the New Rome. As was natural, the consequent lowering of prestige was not well received in Rome; a bitter rivalry was the result, the remnants of which are reflected even to-day in the relations between the Greek and Roman Christian Churches. At intervals Rome regained its position, but eventually the Empire was split into two parts, the Western one bound up with and influencing the Latin and Teutonic peoples, and the Eastern one more and more moulded by Eastern Asia, until eventually it was overrun and absorbed into the Ottoman Empire in the fifteenth century.

Architecturally, the style of building of the Eastern Empire is known as *Byzantine*, and that of the Western as *Early*

Christian. Early Christian may, however, be regarded as the early phase of Romanesque building. The term *Romanesque* covers the buildings of Western Europe during the period from the decline of the Roman Empire till the Gothic style begins.

EARLY CHRISTIAN

During this period there occurred the decline of the Roman Empire and the difficulties of a long period of struggle, until

FIG. 23

eventually a new organization of Europe was built up. The people were poor, and life was hard. There were many disturbances and much movement of population, many invasions which resulted in assimilations between peoples. Through all this period the constantly emerging influence was the Church. Although it used peoples for its own purposes, and rulers made calculated use of the Church when to their advantage, it remained a shelter for civilization and culture throughout the Dark Ages.

Religion and Churches. The main buildings that were of interest and remain to us were the churches. They were developed from the Roman basilicas, indeed many buildings

originally built as basilicas were afterwards used as churches. The new religion demanded not so much a building to be a dwelling for their God, as a place where a large congregation might meet to worship a God whose power was all-pervading and who did not particularly live in that building. Therefore the design of the basilica was most suitable. Much of the material used in building new churches was obtained from other buildings, and columns and capitals (Fig. 24) were often used again. If they were not quite of the requisite height they were made up in some way to serve their purpose. Where new columns had to be constructed, they were of crude craftsmanship, although continuing in a dim way the traditional Roman design.

The Church Plan. The form of the churches (Fig. 24) is interesting to us because it foreshadowed the general planning of the medieval church. The apse is the chancel. There is the nave, with the clerestory wall above arches supported on columns or piers; on either side of the nave are the aisles. There were occasional polygonal or circular plans, most interesting in their arrangement of the wall and roof masses. Another feature of these churches was the *campanile* or bell tower, usually built apart from the church, but nevertheless a tower that later became incorporated in the main structure. The interiors of the churches were richly decorated with mural paintings, but wherever possible decorations were made permanent with mosaics. Marble inlays were also used and, like the columns, were often taken from earlier buildings. The exteriors were plain by contrast. But in the bright Italian sun, their plain light walls with small window openings contrasted with the roofs, and the whole presented an interesting arrangement of light and shade; and the external effect was most pleasant, and more attractive than many of the ornate exteriors of other periods.

Building Methods. In these buildings the methods employed in the earlier Roman periods were used, but there was a general decline in the standard of craftsmanship. For the walls, concrete was the main material in conjunction with masonry or brickwork. The use of masonry increased, however, as earlier buildings furnished "quarries" for much of the stone. Roofs were of wood and were of comparatively small span. The builder possessed less skill, and was therefore less

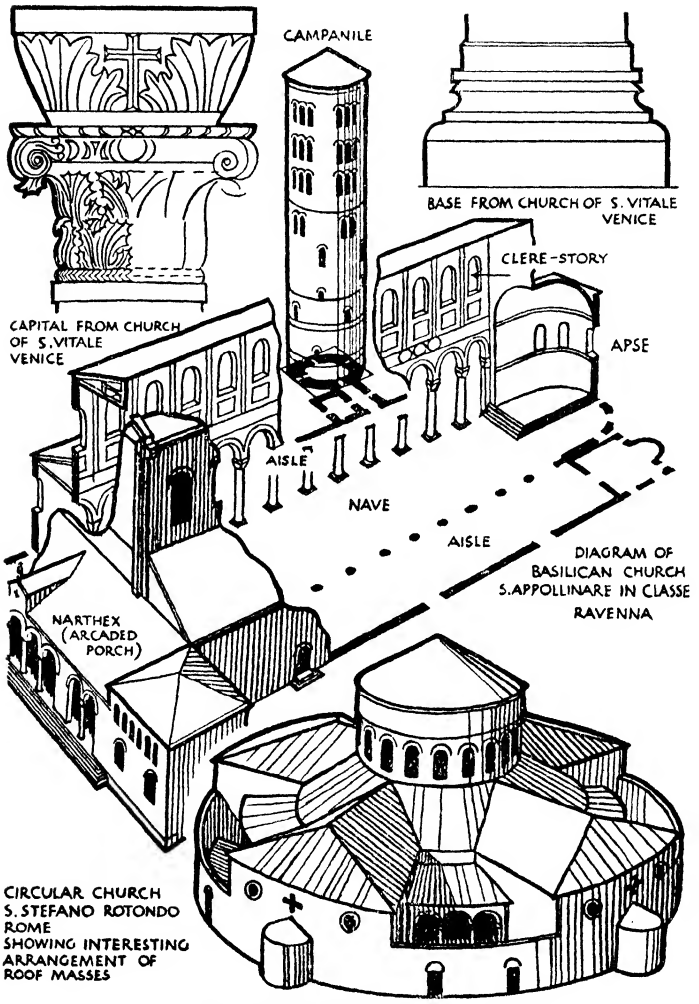

FIG. 24. EARLY CHRISTIAN CHURCHES

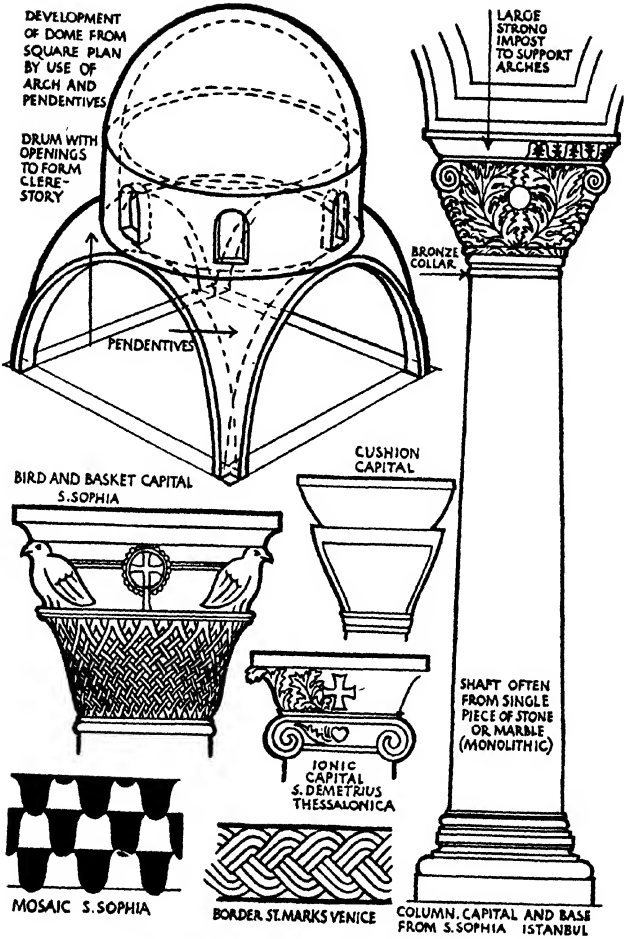

FIG. 25. DETAILS OF BYZANTINE BUILDING

adventurous. He was neither a building craftsman in the Greek sense nor an engineer in the Roman sense.

BYZANTINE

There is no doubt that Byzantium occupied a much more important place geographically than Rome in this period, as it was the commercial centre of the civilized world of the day. It was but natural, therefore, that the skilled craftsmen and architects should be attracted to this centre, where ample work of the highest grade was to be obtained. It follows, also, that the centre being farther east, the builders would include more and more men used to, and having knowledge of, the structural principles underlying Eastern methods of building. Thus it is not surprising that Byzantine architecture had a very Eastern flavour.

The Dome. The dome became a very popular method of roofing; it was used in the Eastern style and method, as seen in Seleucid and Sassanian architecture. By the use of pendentives (Fig. 25), the dome was adapted to cover areas square in plan. The Romans had utilized the dome only to cover circular or polygonal areas.

Development in Building Design. The column (Fig. 25) was used to a large extent, and it was frequently employed as a constructive element, almost always in conjunction with the arch. By a combination of domes, arches and intersecting barrel-vaulting, huge areas were roofed (Fig. 26) that in Greek or Roman buildings would have been spanned by ridged roofs. A feature of the Early Christian churches was the raising of the nave roof by a clerestory wall (Fig. 24). Much the same device for lighting was introduced with the dome in later Byzantine work; the dome was raised upon a drum into which openings for lighting were introduced (Fig. 25). This device was taken further in the Renaissance by being made into a colonnaded feature (Fig. 57). The walls were still mainly of concrete, but bricks were used as a facing and their decorative possibilities, both as regards arrangement and colour, were exploited to the full.

Marble. Byzantium had become the centre of trade in marble, and this material was employed for a variety of decorative purposes. Walls were faced and floors were paved; gorgeous effects were produced by use of various colours and inlays.

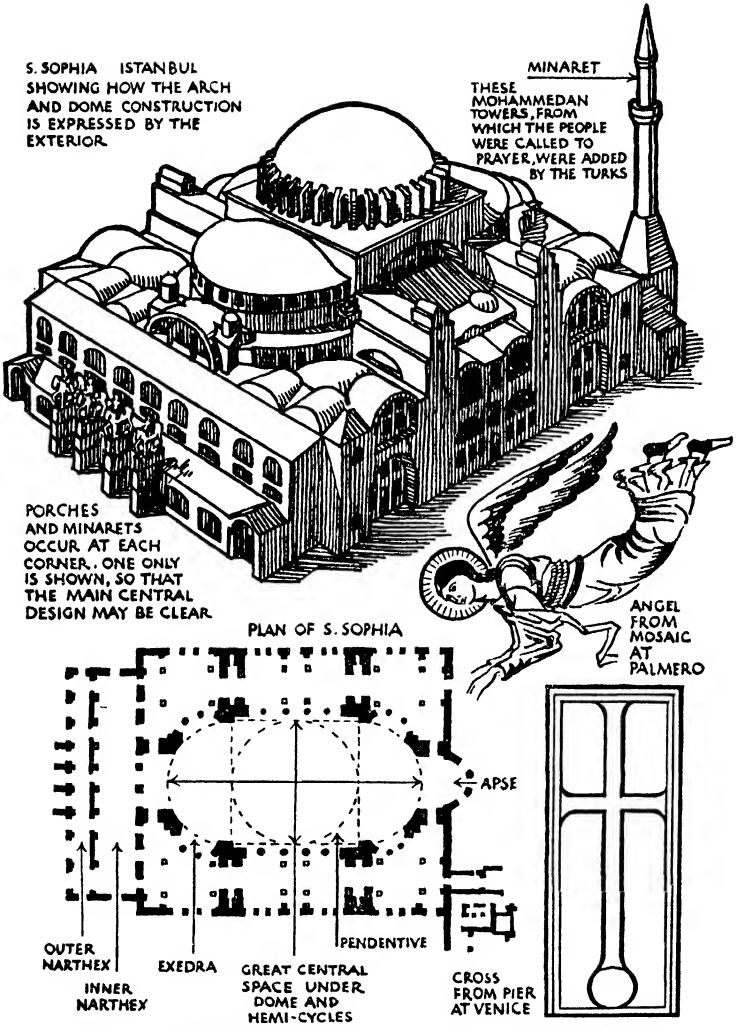

FIG. 26. BYZANTINE CHURCH OF S. SOPHIA, AND EXAMPLES OF CHURCH DECORATION

Columns. Marble was also used for columns; often they were made in one piece (*monolithic*) and were not built up in a series of drums or semi-drums. To strengthen these "one-piece" columns, which sometimes would split owing to natural faults occurring in the length, a bronze band was placed at each end; these bands added to the interest of the decoration (Fig. 25).

Decoration. The favourite decoration for walls and ceilings was mosaic (Figs. 25 and 26). Where painting was used, it was looked upon as an imitation of the more permanent mosaic. In order that these decorations could spread over the whole surface of a wall or ceiling, and because their design compelled the appropriate division of the surfaces, there was little need for mouldings, and they were accordingly little used in interiors. The capitals (Fig. 25) show varied treatments of the Corinthian, Composite and Ionic styles, as well as the typically Byzantine square cushion capital and the circular basket form. A feature is the doubled capital derived perhaps from additions made to bring "second-hand" columns up to requisite heights. Bird and animal forms were often introduced into the decoration of capitals, a foreshadowing of medieval European treatments.

Influence of Byzantine Building. The influence of Byzantine building was spread widely over the eastern parts of Europe and the Mediterranean, and in all those territories where the Greek Church was in the ascendancy, particularly in the Balkans, Asia Minor, Egypt and Russia. It affected Saracenic architecture considerably, and its influence was even predominant for long periods in certain parts of Italy, particularly at Venice and Ravenna.

ROMANESQUE

It has already been noted that there was a long period of chaos after the decline of the Roman Empire in Western Europe, and that the Church was the main steadying factor. What there remained of culture was under Church protection; thus the best builders and craftsmen became part of the religious organization. Even so, the standards of technical achievement were low in comparison with what had gone before or what was being done in the Byzantine Empire.

Beginning of the Feudal System. Time passed and the main European nations, as we know them to-day, began to emerge, not so much then as nations, but rather as estates of the ruling families. Under these families the feudal system began: this system was based on serfdom in the place of slavery; for, as the slave class gradually died out, the poorer people, even if freemen, were forced into becoming serfs by sheer economic pressure. After all, the system did offer the prospect of ordered stability in an unsettled time, and men may have been glad to take the opportunities which it offered. The serfs were bound to the land and a change of ownership made little real difference to them. The "holding" or the ownership of land carried with it an obligation to furnish certain military or other support to the ruler on demand.

Buildings. The main buildings erected were those connected with the church, such as cathedrals, churches, and monastic houses, and those necessary for military purposes. These latter would be of strong but crude structure, and being built on sites chosen for their defensive possibilities would be replaced by better buildings as building knowledge became more advanced. Romanesque architecture shows much variation in styles according to the climate and materials available in the different countries of Western Europe.

Charlemagne had done much to revitalize building and the artistic crafts generally. His influence seems later to have been affected by the idea that the world was to come to an end at the close of the first millennium. Certain it is, however, that the eleventh century saw a great burst of building and cultural activity. We will consider the style of this century, or at least our local treatment of it, when dealing with Norman architecture, for in this country the style was introduced largely by the Normans who had been very much affected by their contacts with the more advanced work of the Franks.

Having concluded the preliminary survey of the ancient buildings that have influenced Western European architecture, we will concentrate in our future reading on the building work of our own country, referring of course to those external influences which have affected it from time to time.

SECTION IV
ENGLISH MEDIEVAL BUILDING

CHAPTER VIII

INTRODUCTORY

England and the British Isles. England is the largest and most populous area of the British Isles. It is separated from the European mainland by a mere twenty miles at the nearest point. It was therefore in a position to absorb European influences and ideas easily, yet because of its insular position and outlook always sifting and selecting ideas from these and ready to modify and even reject them at will. As a maritime nation its knowledge of Europe and later the whole world tended to be wide-spread and less localized than was the case with countries whose main connections with their neighbours were overland.

Climate. The climate is temperate and humid. Buildings have to withstand high winds and rain, and a certain, although usually but a limited, amount of snow. The heat of the sun is rarely an inconvenience. Thus our buildings have been provided with fairly high-pitched roofs, well-sheltered doorways, often with porches, and with ample window space.

Building Materials. From a reference to the map showing the distribution of building materials (Fig. 27), it will be seen that there is a great variety, spread over the whole country. There is a belt of oolite limestone which stretches from Yorkshire to Dorset and which gives us that delightful Cotswold stone building. There is the granite and slate of the North, and of Wales and Cornwall, producing a plainer style. We note the sandstone of parts of Yorkshire and Lancashire, and the large areas where bricks and tiles are made because of the beds of clay and shale. There are also the chalk and flint districts where "knapped" flints are used to produce such characteristic walls.

Local Styles. The geological structure of the district dictated its building materials and local style. Transport of these

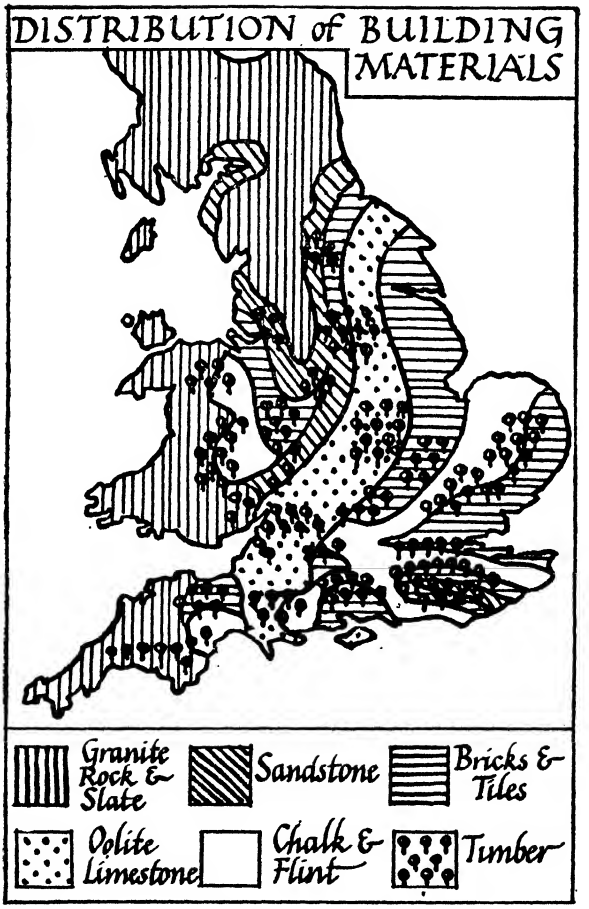
DISTRIBUTION of BUILDING MATERIALS
Granite Rock & Slate
Sandstone
Bricks & Tiles
Oolite Limestone
Chalk & Flint
Timber

FIG. 27

materials was mainly local until modern times. Caen stone was, however, imported from Normandy, and Purbeck marble was used in many parts of the country. Timber was plentiful and the timber-framed house with the wall spaces filled with brick, wattle and daub, or lath and plaster, was common in many parts of the country. Some houses were built almost entirely of wood. The open timber roofs of the medieval period and the joinery of the Renaissance take high place in our traditions of craftsmanship.

When dealing with such a subject as the history of building it is convenient to divide it into various periods and to date these. Such divisions can only be approximate. Styles did not change overnight between the last day of one period and the first day of the next. There is a long stage of transition from the full expression of some period to that of the following. Let us therefore consider dates merely as convenient pegs upon which to hang our more detailed knowledge.

Before the time of the Roman Conquest there can have been little building of any pretentions. There are several monumental erections such as at Stonehenge, remains of lake dwellings at Glastonbury, and beehive, cave and pit dwellings in various parts.

Remains of Roman building are still being found, and from what has been unearthed it is evident that much building was done. Notable discoveries made at Bath, Silchester, Chester and St. Albans show the character and quality of their work and offer examples of all the characteristic buildings, forums, baths, villas, and so on, that were features of Roman civilization.

CHAPTER IX

THE ANGLO-SAXON PERIOD

A.D. 410–1066

History. Historically this period is one of successive invasions from Europe, but particularly from what is now Northern Germany, Denmark and the Scandinavian countries. First raiding parties, then the occupation of what would now be termed a bridgehead, followed by deeper and wider penetration: Saxons, Angles, and Jutes pushed the native British farther and farther to the west, despite a much fiercer and more successful resistance than they are generally given credit for, until they finally occupied only Wales and Cornwall. Then came conflict between the various kingdoms into which the country had been divided under the Anglo-Saxons. Finally, after great struggles between the three greatest, Wessex, Mercia and Northumbria, Wessex achieved supremacy under Egbert.

The Danes. Soon the Danes constituted a menace to a country which had begun to settle down to a more ordered way of living, had been converted to Christianity, and had built numerous churches. The Danes pushed into the country in the same way as had the Anglo-Saxons to whom they were racially related. Eventually, after severe struggles lasting about 150 years, the two peoples were, to an extent, merged under King Knut (Canute).

Edward the Confessor. The Danes had been converted to Christianity some time previously, and this was a great civilizing factor. Then came an English king again, in the person of Edward the Confessor, who had been brought up at the French Court and was pro-Norman in his outlook. During this time the power of the Church was greatly increased, and many churches were built. Under Edward the building of Westminster Abbey was commenced. He died early in 1066, and before the year was out William of Normandy had invaded the country, had defeated Harold, successor to Edward, and had had himself crowned at Westminster.

Social Organization. The social organization of the Anglo-Saxons was based to a large extent on feudalism. The king, and under him thegns and ealdormen formed the ruling class. Under them were the ceorls, or freemen, who were the farmers and craftsmen; and at a lower stage came the slaves. The population was organized into village communities; each man or household was entitled to his strip of land for cultivation, and there were common rights for hay and pasture. Each community was self-supporting and had its own craftsmen for building and making of farm implements. Written laws existed which were from time to time revised. A court met once every four weeks in each *hundred*, and offenders were judged by representatives of the group of villages which formed the "hundred."

Building Materials. The main building material of Anglo-Saxons was timber; of this they built their churches and their dwellings. The use of timber makes it clear why so few building examples remain to-day. Nevertheless, a number of stone buildings are still left to us. The best known are a church at Bradford-on-Avon, another at Sompting, and the Tower at Earls Barton, all shown in Fig. 28. There are also isolated remains of former Anglo-Saxon structures existing, often incorporated in churches rebuilt in a later style.

Masonry. Anglo-Saxon masonry was of very crude technical craftsmanship; the joints were coarse, and often other materials such as tiles were built into the wall, frequently forming a herring-bone pattern. A feature is the "long and short work," as the arrangement of the stones at the angles or *quoins* is described (Fig. 28). Similar long stones are often used to form a framework on the wall to bind it together and this treatment is very reminiscent of the wooden-framed house. The towers seem to have been terminated by roofs running to a central point and so steeply pitched that they appear almost as spires (Fig. 28).

Details. No doubt many of the clergy had seen more ambitious work on the Continent, and would urge the local craftsmen to adopt new forms, or new arrangements and grouping of forms, and to reproduce the decorative details. The arch was used for window and door openings. Window openings were arranged at Earls Barton to from a miniature colonnade with the peculiar Anglo-Saxon balustrading (Fig.

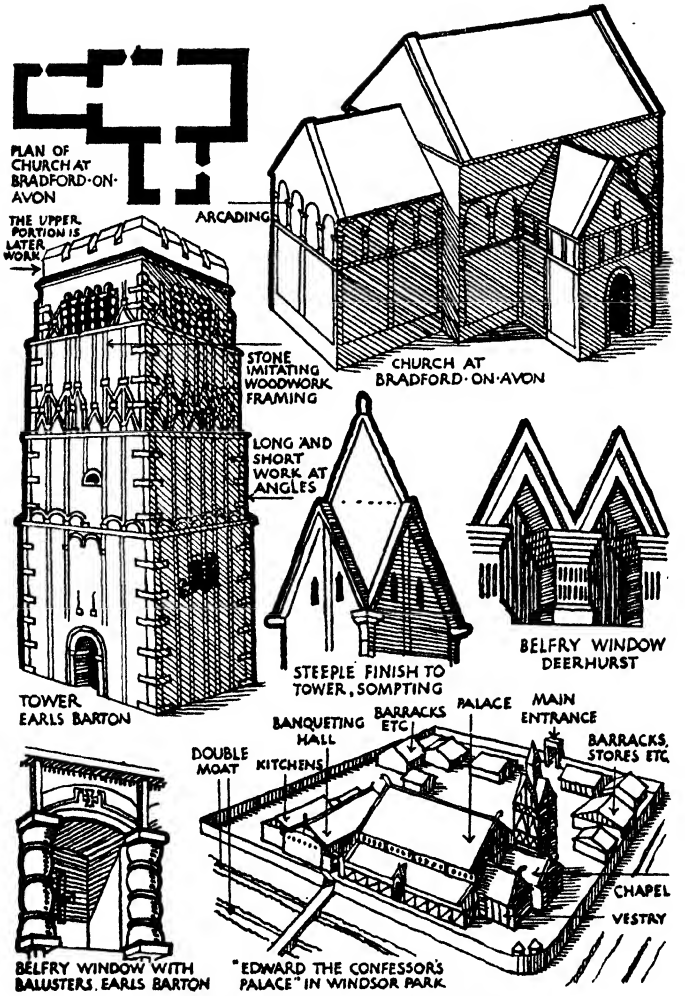

FIG. 28. ANGLO-SAXON BUILDING

28). At Wickham in Berkshire the window opening consists of two arches, the central support being a crude form of the Tuscan column. At Bradford-on-Avon there is an arcading running around the entire exterior of the building (Fig. 28). Inside there is a very roughly carved figure of an angel. Another method of treating openings is by placing two straight stones obliquely to form a triangular heading as in the belfry window at Deerhurst (Fig. 28). The openings were not splayed on the inside only, as in later work, but on the outside as well. Such carving as did appear in the stonework was in low relief, and very roughly cut. Mouldings were not often used, and when employed were extremely simple.

Plans. The plans of the churches were simple—a long rectangle, with the chancel, roughly square in plan, fixed to one end, and the entrance protected by a porch (Fig. 28). Dwellings must have been very simple, wooden walls with a pitched roof. A sketch of a reconstruction of "Edward the Confessor's Palace," in what is now Windsor Park, is given (Fig. 28), and from this may be judged the simplicity of the ordinary man's dwelling which was in all probability little better than a shed with walls of rammed earth strengthened with a timber framing.

CHAPTER X

THE NORMAN PERIOD

A.D. 1050–1200

The Norman Invasion. William of Normandy had made careful preparation for his invasion of England: (1) he held out the prospect of material rewards to those who helped him, (2) he enlisted the Pope to bless his cause, (3) he made out a very solemn and plausible claim to the Throne, and (4) he made up as powerful an invading force as possible. It is unlikely, however, that he would have been successful had Harold been at hand to resist his landing, or indeed had the country been solidly united. But the Saxons were divided amongst themselves. Certainly, in the long run the Norman invasion worked out for the general good. At first the Norman and Saxon relations were as between conqueror and conquered; but in time the Norman kings had to turn to the Saxon element for support against their over-powerful barons, and this, together with influences due to the passage of time, unified the nation.

It was the first and second of William's preparations that were to affect the life and building of the people. For after the victory came the division of the spoils, the country being divided amongst his supporters. The Church was given a position of great importance and the whole of religious life was re-organized by Norman bishops and abbots.

Although William had been crowned in 1066, it was some years before the country was really subdued, and the great Norman keeps were built up and down the land to form strong focal points of the Norman power.

The Norman element which was in control, and which had dispossessed the Saxons of their land, was but small and was constantly in fear of rebellions. This element formed the ruling class or aristocracy and included the leaders of the Church. When some sort of order had been restored, the Normans brought over many skilled craftsmen, and many Norman tradesmen began to settle in the towns that grew around the shelter of the castles.

The Norman Feudal System. But the greater part of the population worked on the land, and all the conditions were present and favourable for the King to draw up a strict system of feudalism. As previously noted, a form of feudalism was already in existence. The Normans made ownership of the land the basis of their system. All land belonged to the King. He divided this land amongst his nobles and barons, including a certain number of Saxons who were content to support him.

FIG. 29

They were the King's *tenants-in-chief*. In turn these granted land to their followers, who were termed *mesne tenants* and who could allow *free* men to take and use some of this land. At the base of the pyramidical structure were the *serfs*.

The whole arrangement was founded on service, for the tenants-in-chief had to supply a certain military force to the King, and the individuals concerned in this were given land in return. But it was not military service alone, for there were certain labouring levies as well. The serfs had to work a number of days on the lord's land as payment for the land allowed them.

Under a strong king the feudal system worked well enough, but the danger lay in a weak or vicious ruler. Then the

barons became irresponsible tyrants, and the less powerful members of the population, the lesser free tenants and serfs, had an unenviable time. Under William Rufus, and Stephen, the country was in a sad state.

Influence of the Church. Along with this secular social organization, existed that of the Church. The various monastic orders had immense influence. They kept cultural interests alive, particularly in connection with the artistic crafts and especially with building and architecture. It was they who erected churches and cathedrals, and they also had much to do with building bridges and roads, and maintaining them. In addition, they owned large estates, and the Carthusian order did much to restore those parts of the country that had been ravaged owing to dogged resistance to the Normans.

The Domesday Book. In 1085 William caused a complete survey and description of the land of the entire country to be made and compiled in what is known as the Domesday Book. His object was to find out the exact details of all holdings so that he would have a basis for assessment of taxes. The book enables us to gain a very clear picture of our country at that period.

The Village Community. Each village community was, to all intents and purposes, self-supporting. It had its own agricultural men, swineherds, ploughmen, and the like, who formed the bulk of the little population, but there were brewers, bakers, potters, carpenters, smiths and other craftsmen, who would be paid in kind for their work. Almost all these men were bound to the land, but in the towns a greater degree of freedom existed, partly through the gradual adoption of money as a means of exchange. At the best, life must have been a hard struggle with little in the way of luxury; at the worst, in times of poor harvests, or under tyranical local rulers, life must have been absolute misery.

Norman Buildings. The Norman period coincided with a great outburst of religious building. Cathedrals and churches were built where none had previously existed, while many were rebuilt, or others built near existing ones which were pulled down on the completion of the new erection. Many abbeys and monasteries were also built. The outstanding features of secular building were the keeps or fortified towers which were erected all over the land.

Divisions of Norman Architecture. Norman architecture is usually divided into three periods: (1) *Early* (1050–1100), (2) *Middle* (1100–1150), and (3) *Transitional* (1150–1200). These periods show a gradual development in conception and construction, in the craftsman's skill, and in the progression toward the Gothic Style proper.

The Norman Achievement in Building. Norman is the English treatment of the Romanesque style. It seems a far cry from the studied perfection of a Greek temple to a Norman building, yet there is a certain degree of continuity. A steady degeneration in building had gone on for about six or seven hundred years; but the worst period was now past and man was feeling towards a new order. The old forms were used at first, because they were all that men knew, and these only in a crude and debased way. But Norman architecture is not debased, because behind it was a new spiritual urge. It was something that mattered, not something that had to be done as a task. Thus countless men worked at developing building ideas. They did their level best each time and were determined to do even better on the next occasion. They were not afraid to experiment, and they had their share of failures. In a comparatively short time, however, they were building in a new and exciting style that was named "*Gothic.*" In Egypt and Greece the builder had come to the solution of his problem of how to build with massive units of stone. The Romans found how to build and bridge great spans by the use of concrete. The Normans had the problem of building with small units of stone. They started by a compromise—masonry and a crude concrete construction—and finished by showing a true masonry construction with small stone units which is one of the chief features of Gothic architecture.

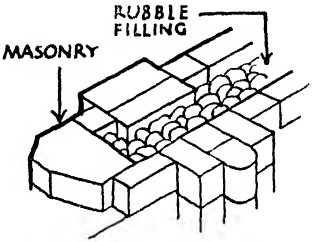

FIG. 30. CONSTRUCTION OF NORMAN WALL

Walls. Norman walls are very thick in proportion to their height. Strength was very much associated with mere mass. The exterior surfaces of a wall were of masonry, but the centre

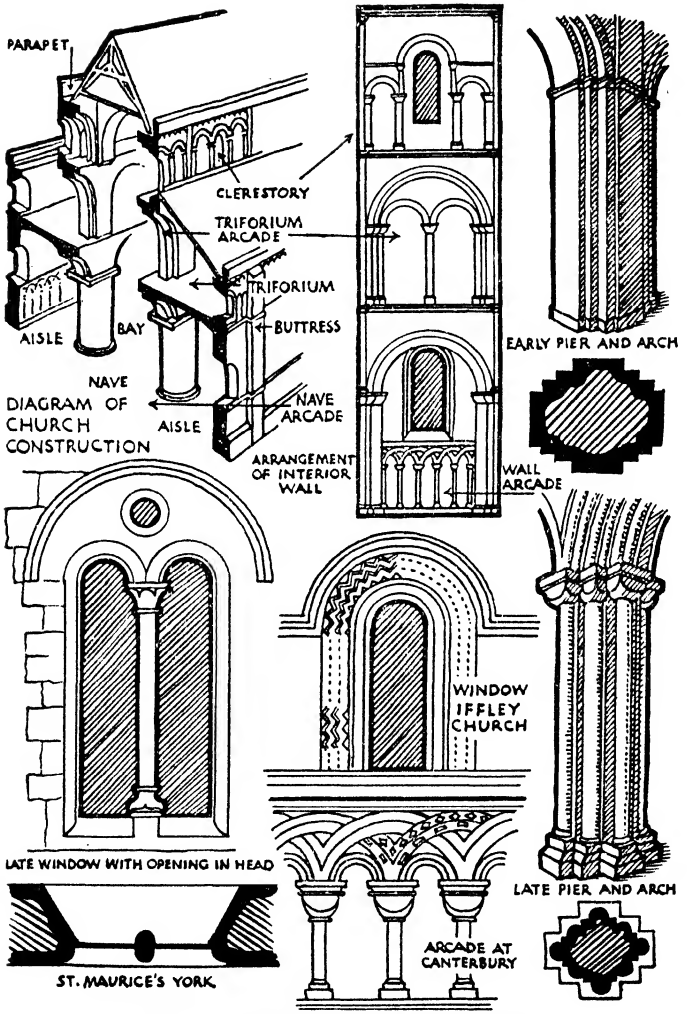

FIG. 31. DETAILS OF NORMAN BUILDING

was of rubble (Fig. 30), and the bonding between the two was weak, evidence of this being seen especially after settlement. The masonry joints were wide and coarse in the early period, but later they were finer and much more exact. Buttresses were wide and of slight projection (Fig. 31).

Piers and Arches. Piers were as massive in character as the walls (Fig. 31), and of the same construction—masonry and rubble. They supported semicircular arches which in turn supported the wall and roof above.

Doorways and Windows. The door and window openings had semicircular heads (Fig. 31). The windows were very small on the exterior wall, but were splayed to a much wider opening on the inside, thus allowing light to enter more freely and to extend over a larger part of the interior as the angle of daylight changed. In later Norman, windows are often in pairs, and there are cases where this feature has been combined with the frequent arcading to form pointed or lancet openings. It was in conjunction with the favourite interlaced arcading that this occurred (Fig. 31).

Details and Decorations. In early work the piers or columns are simply square or circular in section. In later work clustered attached columns appear. The early capitals are convex in outline (*cushion*); in later capitals the form is concave. All these features are illustrated in Fig. 31.

In decorated work the stone was cut to form crude ornamental patterns with an axe, but, as the desire for more intricate and highly finished decoration grew, the chisel was used. Carving was chiefly employed to emphasize the arched form wherever it occurred, but especially around doorways. In order to save material and to create a decorative effect, the doorways opened out into a series of widening sections, each with its own band of carved work and often its own column and capital (Fig. 32). These features, which were repeated on other openings, are known as *orders*. (This term must not be confused with the other term "orders" of classic architecture.) The early Norman ornament was of simple design and its effect of barbaric richness was secured by the repetition of such heraldic motives as the *chevron*, *billet*, and *cable* (Fig. 32). A texture was often developed from these and applied to the surface of columns.

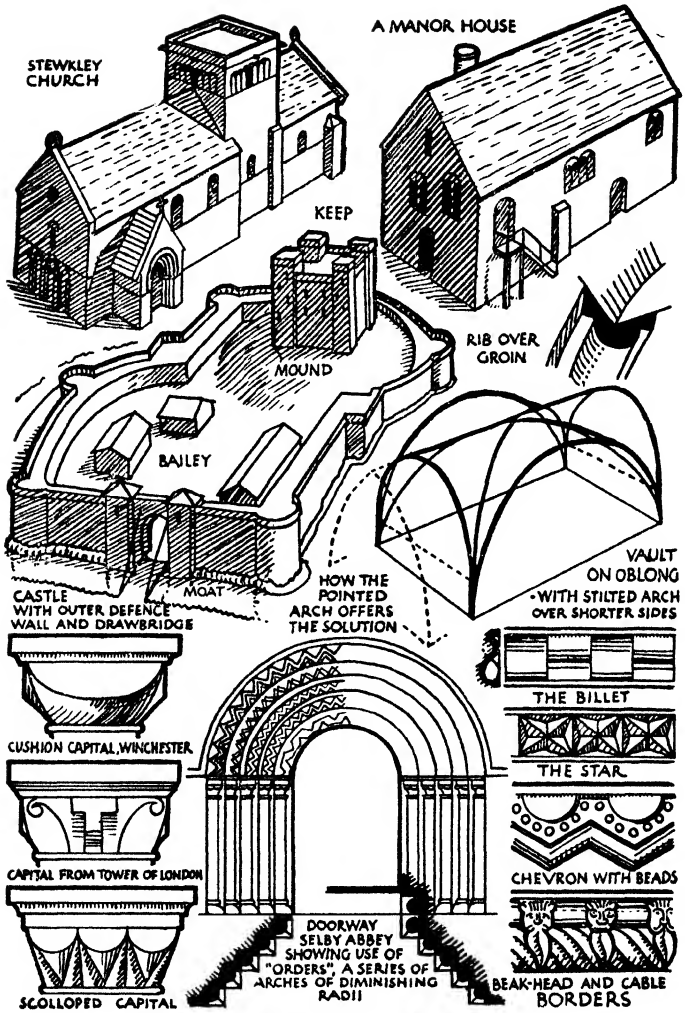

FIG. 32. FURTHER DETAILS OF NORMAN WORK

Roofs and Vaulting. The difference between a *roof* and *vaulting* should be clearly understood. A frame and surface covering, of wood construction, was protected by a layer of lead or covering of shingles; this formed the "roof." The names given to different types of roofs are generally derived from the design of the framing which was used. Where the timber framing shows, the roof is termed *open-timbered.* Sometimes the framing was covered underneath with boarding to form a ceiling; such ceilings were often decorated in colour.

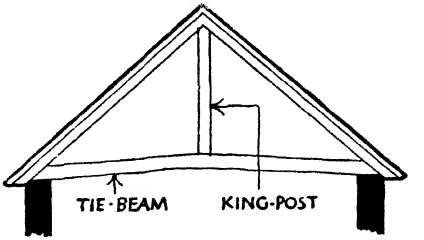

FIG. 33. TIE-BEAM AND KING-POST ROOF

In the early Norman period the main framing of the roof consisted of a heavy tie-beam, pairs of rafters, and a king-post support at the centre. The inclination of the rafters was approximately 45 degrees. The general outline only is given in Fig. 33 to indicate the "form."

"Vaulting" was of stone construction; it was the visible interior covering and screened the roof of the church. Vaulting has therefore the function of a ceiling, and not often that of a roof. The early builder probably considered that vaulting gave a more homogeneous appearance to the interior of a stone building, and at the same time was an excellent protection against fire. Vaulting was often added to buildings which originally had open-timbered roofs.

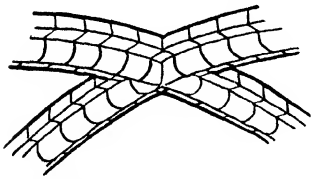
FIG. 34. RIBBED GROIN

Barrel-vaults were used by the Normans, and a development occurred with the intersections of these. In place of the simple groins of early work (as in the Roman style), a ribbed and panelled form began to be used (Fig. 34). This evolved into the beautiful panelled vaulting of the mature Gothic.

Plans. Plans were very simple. *Transepts* (aisles at right angles to the nave) were introduced into churches, and the nave was lengthened. Over the intersection of the nave and transepts, a tower was in many cases erected. This was rather adventurous considering the limited knowledge of building calculations that existed; in consequence, the great weight of the tower was the cause of a few disasters. The "apse" appeared again in the plans of the larger churches and cathedrals.

Military Buildings. The keeps and castles are representative of military architecture. The core of the plan was the keep, a strongly built tower of several stories, with walls of immense thickness; often built over a spring to ensure a water supply. The site was surrounded by a fortified wall or even a series of walls, and outside these was a moat. If possible the castle was placed on an elevation (Fig. 32). The Normans introduced the practice of constructing separate stories with the stairs for the upper stories built on the outside as a defensive measure.

It must be remembered that all buildings of stone were constructed in the same general manner whatever their function. Therefore, when the Normans built in stone, although for different purposes, a church or a castle or even a small manor house would have many similar characteristics.

Domestic Buildings. There were a few small houses built of stone, manor houses for the most part. A manor house would contain, if single storied, a large hall, a small room for the lord and his wife, and a few rooms such as a kitchen and wine-cellar. If the building was in two stories, the first floor (Fig. 35) would contain the main rooms, and the kitchens, etc., would be under these on the ground floor (Fig. 32). A crude form of fireplace was introduced, although the usual practice was to have the fire in the centre of the hall and to allow the smoke to escape by a vent in the roof.

The peasants lived in huts of "wattle and daub." The walls were formed of a screen of interlaced wood, looking like basket work, and this was covered with clay. Quite large dwellings could be built using a wooden framework and filling the spaces with wattle and daub.

CHAPTER XI

EARLY ENGLISH GOTHIC

A.D. 1200–1300

Gothic Building. The name *Gothic* was given, by the writers of the Renaissance, to the periods that we are now about to consider; the term was one of disapproval. These writers felt that the style, as it developed, was barbaric compared with the exact classic style that was, in some measure, being revived. This was a mistaken view, for Gothic building as it developed showed great constructive achievements. The builders accepted their materials, stone and wood units of limited sizes, and erected buildings of great dimensions and beauty by using these materials ever more economically, until their works became masterpieces of engineering in their placing of weight and support—thrust and counterthrust.

Loss of King John's French Possessions. The thirteenth century opens with the loss of King John's French possessions. This proved to be of the utmost importance to the future development of this country; for from the time of the Norman invasion, England had been part, and in some senses the less important part, of a king's realm which also included large areas in France. The court language, and almost all cultural influence, was French. These conditions were to the ultimate good of this country for France was the more advanced, but it was time now for England to take her own place. Distinction between Englishman and Norman had by this time largely disappeared, and a national feeling had become evident. England was now to be the metropolitan area and no longer the provincial.

Magna Carta and Parliament. Not unconnected with the loss of the French possessions was the drawing up of Magna Carta (Great Charter) and the subsequent struggle to make it the basis of the accepted constitutional structure of the country. King John signed the Charter at Runnymede in 1215, but had no intention of honouring his promise; he died shortly after. Henry III, the next king, who came to the throne a minor, also showed no signs of respecting the Charter.

Until the country found a leader in Simon de Montfort, little effective effort was made to enforce it. The barons, who had been the main instrument in drawing up the Charter, were now less disposed to support Simon's effort and in an attempt to gain a wider backing he summoned the Parliament of 1265, which included the Knights of the shires, Citizens and Burgesses of the towns. It was this structure of Parliament, the Lords and Commoners, which led to the peculiar Parliamentary system of this country; a system which has, for centuries, made this country an example of political stability.

Edward I and Parliament. Simon de Montfort was defeated by Prince Edward, but when the Prince came to the throne as Edward I he continued to develop parliamentary ideas. In 1295, finding himself involved in war with France, Scotland and Wales, he summoned the Model Parliament to vote supplies, and two years later (1297) Parliament was used by the barons to make the King conform to their interpretation of the Charter. At this period, however, Members of Parliament felt attendance to be much more of an obligation than a privilege.

From 1282 to 1284 Edward was involved in a struggle with Wales, which resulted in the incorporation of Wales with England. Wales had long held out against Anglo-Norman conquest, and even after the incorporation was a most unsettled part of the country. Its Marcher-lords were very actively involved in the Wars of the Roses. It was not until the reign of Henry VII that Wales was pacified, and this was due rather to the creation of a strong central authority than to the King being a Welsh Tudor.

Development of Trade and Commerce. The thirteenth century saw a growth of the towns and a rise in importance of trade and commerce. The feudal system continued, but the peasants enjoyed better conditions and many bought their freedom and either moved to the towns, or developed their own farms.

The Friars. The friars, who became established in England about this period, moved among the people more than the monks had done, and this did much to raise the general outlook and standards of living. These friars helped the advance in quality of craftsmanship, and encouraged a rise in the number of craftsmen; these things were reflected in the

greater variety in the work for which they were personally responsible.

Guilds. The best craftsmen were in the employ of the Church, but the secular craftsmen began to organize into Guilds which were intent not only to protect the rights and privileges of their members but also to maintain, and if possible improve, the standard of work done. It was seen clearly that privileges entailed their corresponding responsibilities. The craftsmen of that day had a real enthusiasm in doing their work; on the whole, it was extremely interesting, because they had to use much of their own initiative and creative powers.

Importance of the Thirteenth Century Church. Especially was this so in the case of a church; it was a building for their use and the craftsmen felt that it belonged to them. In many cases it was the great meeting place of the community, and the nave was used for many purpoess other than church services. It is in such circumstances as these that art becomes a genuine living thing and not a hot-house plant: it should be noticed that this living art is embodied in and made up of the solid and essential building crafts.

Thirteenth Century Buildings. In the main, building was concentrated upon the same kind of structures as in the Norman period. Churches, monasteries, castles, together with a few smaller stone buildings such as manor houses and guild halls, comprised the bulk of the work.

Improvement in Building Methods. The great problem that had to be solved was how to erect buildings of considerable height and floor area while using the minimum of material. The builders had found waste of material and danger through excessive weight in Norman building, and their developing sense of craftsmanship rebelled at not utilizing materials to the greatest advantage. In the walls the strength began to be concentrated at the buttress points. Between these points the wall tended to become merely a screen. The rubble core was used less and less; solid masonry became the rule. This change made for much better bonding and more even settlement. The most noticeable feature is, however, the employment of the pointed arch and the change in, and development of, vaulting which arose from its use.

The Pointed Arch. There are many suggestions as to the origin of the pointed arch. Examples are said to have been

found in Assyrian brickwork. In Byzantine architecture the pointed form occasionally appeared, as seen in ruined palaces in Syria; domes in Cairo are pointed at the top, and the Arabian builder used the pointed arch frequently. The Crusader may have brought the form to the West; but it should be noted that the form is undoubtedly suggested by the interlacing semicircular arcading of Norman architecture (Fig. 31).

Vaulting. The pointed arch led to a great change in vaulting, for the plan of the vaulted area needed no longer to be a square. It is obvious that with the semicircular vault a square plan is inevitable unless stilting be employed, in order that the heights of intersecting arches may be the same (Fig. 32). A pointed arch, however, is capable of variation in curvature and rise, so that any reasonable rectangular area may be vaulted (Fig. 32). This new form of pointed vaulting was done with simple rib and panel construction at first, but later intermediate ribs were introduced (Fig. 36).

FIG. 35. PLAN OF MANOR HOUSE

Roofs. The inclination of roofs became steeper, up to an angle of 60 degrees, and the rafters were set closely together, giving the appearance of what is called *waggon-vaulting*.

Doorways. Doorways (Fig. 36) were usually pointed or trefoiled. The jambs were richly decorated; orders and detached columns occurred as in the Norman period. Doors were often in pairs.

Windows. Early windows (Fig. 36) in this style were lancet shape (another name for Early English is *Lancet Gothic*) and they were usually arranged in pairs, although the number was sometimes increased. If odd in number, the central ones were higher. By splaying the jambs inwards, an effective and unified composition was secured internally, although the openings were usually separate on the outer wall. The two windows were later carried into an exterior unit by introducing a small opening between the two lancet heads (Fig. 36). This was in what is known as *plate tracery* and was cusped into a trefoil,

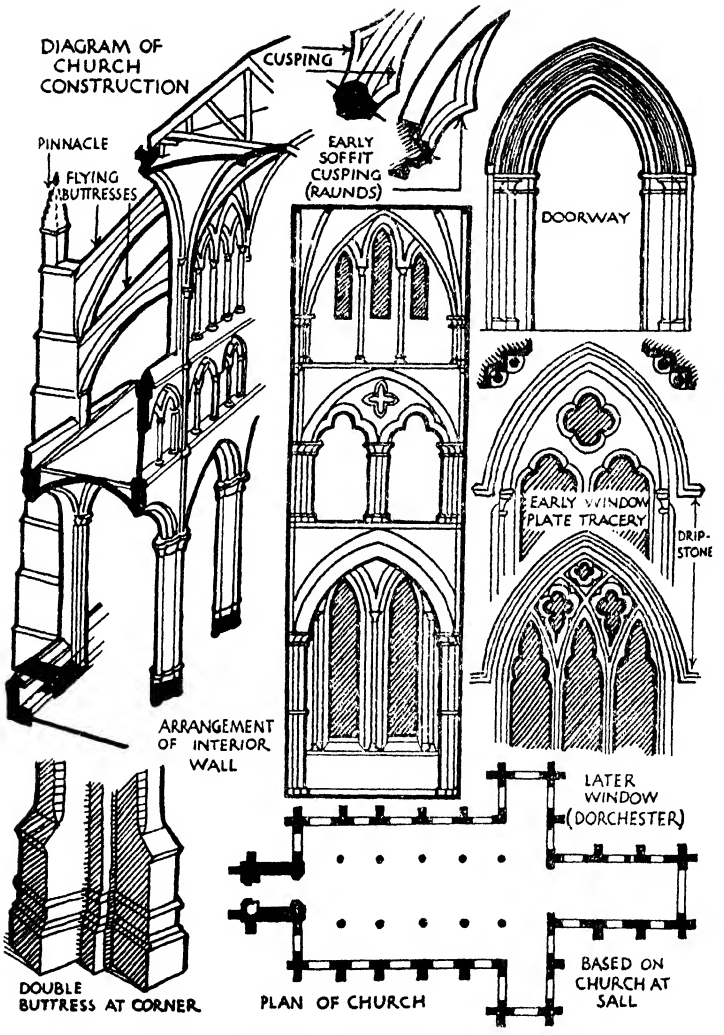

FIG. 36. DETAILS OF EARLY ENGLISH STYLE

a quatrefoil or a cinquefoil. The effect was often helped by a moulded drip stone. Plate tracery quickly developed into bar tracery and this, with the use of cusping (Fig. 36), led to the elaborate windows of the later Gothic periods, in which the window was to form the greater part of the wall screen. In the same figure is early cusping from a window at Raunds showing very clearly a stage in this development. Rose windows were used also (Fig. 37). These appear to have originated from the foiled shape in plate tracery.

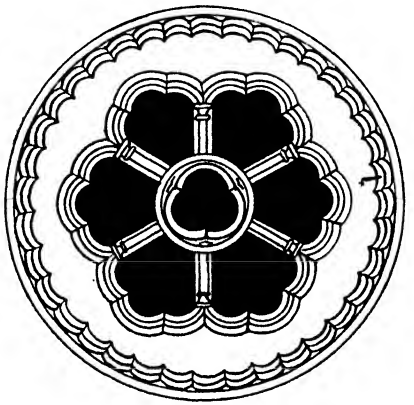

FIG. 37. ROSE WINDOW

Walls. The concentration of strength at the buttress points in the wall have already been mentioned: the buttress itself projected strongly and at least as much as its width. It diminished upward by stages and terminated in a gable or sloping set-off. In this period the flying buttress began to be employed quite frequently (Fig. 36). This beautiful and very practical method of counteracting the external thrust from the weight of vaulting and roof enabled much greater height to be secured in the nave, and transmitted the weight and thrust without interfering with the floor space of the aisles. At external angles double buttresses were used (Fig. 36). The larger churches of this period had three interior stories—*clerestory*, *triforium* (gallery) and *arcade* (Fig. 36).

Piers and Capitals. The piers were (1) single (either round or octagonal) or (2) clustered (consisting of groups of shafts some of which may be detached from the main pier (Fig. 38)). The capital may be simply moulded or in the "stiff-foliage" conventionalized carving so typical of Early English ornament (Fig. 38).

Mouldings. Mouldings showed much greater sharpness than in Norman work, for the simple round mould was converted

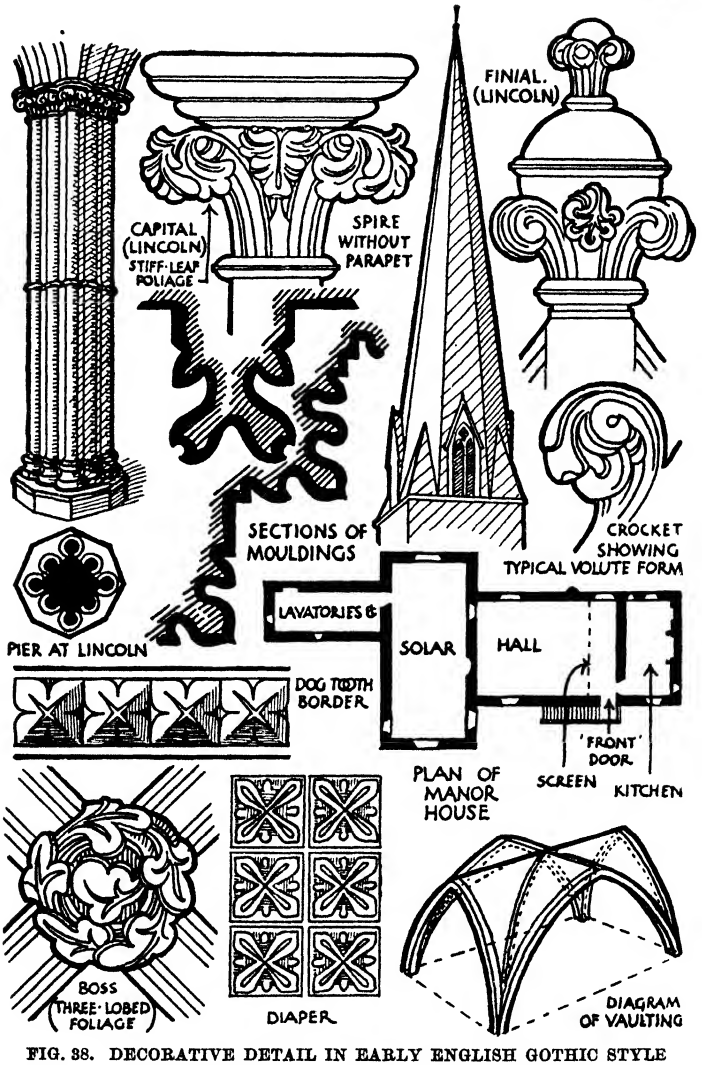

FIG. 38. DECORATIVE DETAIL IN EARLY ENGLISH GOTHIC STYLE

into an ogee section, sometimes with a sharp arris and sometimes with a fillet. There was much deep cutting also which produced fine effects of light and shade (Fig. 38).

Towers. Towers in large churches were frequently placed over the intersection of nave and transept. They often terminated in a spire without a parapet (Fig. 38).

Decoration. The typical Gothic details upon which decoration was centred now occurred. Crosses, finials (Fig. 38), corbels and bosses began to be richly treated. The most usual decorative details were the dog's tooth mould and the stiff-leaf foliage. Carved diaper patterns were in use to secure wall textures. Statues were much employed; for example the western front of the cathedral at Wells contains three hundred statues for decoration.

Painted Decoration. There is often a failure to realize how much colour was used for interior decoration. The mouldings and carvings were painted and gilded in bright heraldic colours, and on the plastered wall surfaces were mural decorations, bright and joyous with an almost calligraphic quality of line.

Domestic Architecture. Secular buildings followed the lines of ecclesiastical building, but, on the whole, the work was of a lower order. The builder began to give greater attention to comfort in designing houses, although the plan still centred around the great hall, which occupied the whole height of the building (with the exception, of course, of the basement, where one existed). At one end of the great hall were the lord's rooms arranged in two stories; at the other end were placed the pantry, kitchen and buttery (Fig. 38). A private chapel was often provided. It is interesting to note that such houses as these could be owned by wealthy men of the merchant classes; this fact indicated an advance in trade and commerce.

CHAPTER XII

DECORATED GOTHIC

A.D. 1300–1400

Scotland. Edward I found it possible to absorb Wales, but the attempt to bring Scotland into his realm was unsuccessful. The struggle for this purpose continued into the reign of his grandson, Edward III, until peace was made in 1328 and Bruce was recognized as the lawful King of Scotland. Scotland had established its independence.

The Hundred Years' War. In 1338 began that long series of struggles with France, known as the "Hundred Years' War." There were periods of sweeping success and also many disastrous failures. Finally, in 1453, a united French nation saw the English with Calais as their only possession in France.

The Black Death. From 1347 to 1349 occurred the fearful plague known as the Black Death, which swept Europe and reached England; it reduced the population by a third and had a far-reaching effect on social conditions by causing a shortage of labour.

The Social System. For many years the feudal system had been undergoing steady changes. Instead of the serf giving up a certain amount of his time in service to his lord as payment for the land he held, it was found much more convenient to commute this service by a money payment which was, in effect, a rent. With this money the lord hired his own labourers, whom he often found did better work than a man whose first thought was for his own land. This system had gone on for so long in various parts of the country that it was looked upon as customary. Partly due to the wars in France, but in the main a result of the loss of labour caused by the disastrous Black Death, prices had risen to an alarming extent and the lord of the manor found he could not obtain sufficient labour with the money he had received in rents from his tenants.

Statutes of Labourers. In an attempt to restore the situation a series of laws known as the Statutes of Labourers were enacted. Labourers were to take only what they were receiving

before the Black Death. Prices did not fall accordingly and men could not live on their wages. Labour was in such short supply that many employers were willing to pay more than the law had fixed. The Statutes were doomed to failure, despite the penalties which were provided to compel their enforcement.

Beginnings of the English Farming System. In spite of this failure the landowners decided to go even further. They decided to restore serfdom and refuse the commutation payments. Discontent was aroused by this step, and a poll tax imposed in 1380, which pressed heavily on the poorer classes, fanned this discontent into open rebellion. The rebellion was put down with great severity, but in the end neither side really gained control; serfdom was disappearing and progress could not be arrested. The landowner in some cases found the solution by letting out his land on lease to a tenant, and so we have the beginnings of the English farming system. In other cases the lords started sheep farming, which needed less men for the land worked and was found more profitable, because earlier in the century the export of wool had been prohibited and Flemish craftsmen had been encouraged to open up a woollen industry in this country. The development of sheep farming led to the enclosure of much common land.

Guilds. In the towns the merchant and craft Guilds had developed into very powerful organizations. Unfortunately, their influence was not so good as formerly. As time went on, they became more and more controlled by the masters; these advanced their personal interest at the expense of the journeymen, who had very little chance of ever becoming masters. It can be imagined also that the interests of the general public were equally neglected. However, in many parts of the country there must have been great prosperity, to judge by the magnificence of the building. Particularly was this the case in the districts most actively connected with the woollen trade, East Anglia, the Cotswolds, and certain parts of the West of England.

For the ordinary man the first half of the century was a period of steady progress. He was content to concentrate on his work and the interest of his own locality. There were chances too that he might make a financial success of life and reach a position of some influence, particularly if he were in

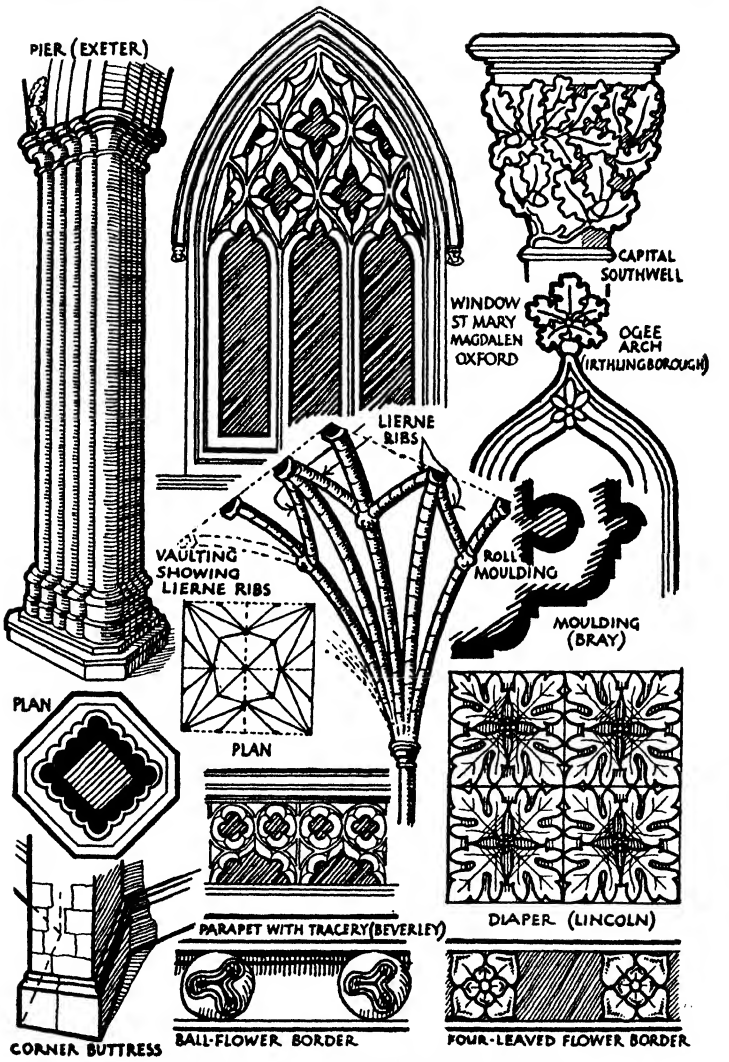

FIG. 89. DETAILS OF DECORATED STYLE

the merchant classes. In spite of the temporary miseries caused by the Black Death and the Statutes of Labourers, the standard of living of the mass of the general population was gradually rising.

The Church. There was considerable discontent against the clergy and with the Church. A Pope living in France was unpopular, and there were many worthless men connected with the church organization. The Friars had become more worldly, and cared less for their work amongst the poor than for mixing with the more educated classes. They did good work in academic pursuits at the Universities, but had lost popular support. It was in this atmosphere that Wycliffe translated the New Testament into English and asserted that the Bible, and not the Pope, was the true basis of belief. He was, perhaps, in advance of the times, but his influence went on until the Reformation.

The Building Craftsman. The building craftsman was at the very top of his form in this century. Particularly is this the case with the mason and the woodworker, but the smith, the plumber, the glazier and the decorator all did magnificent work. In the two first mentioned crafts, men made the most important advances in construction and gained in mastery over their tools; it is their work that is chiefly representative of the advance in building during this period.

Buttresses. In the structure of the building the buttress became more and more a centre of support and counter-thrust to the roof and vaulting. Windows became larger so that less stone wall remained between the buttresses. As more decoration was applied, numerous decorative devices such as niches, crockets, finials and canopies appeared. At the corners of buildings buttresses now were often set diagonally so that one did the work previously done by two (Fig. 39). Flying buttresses were sometimes decoratively pierced.

Walls. The walls of large churches and cathedrals were still divided in height into three parts, clerestory, triforium and arcade (Fig. 40). The clerestory increased in size at the expense of the triforium in later buildings.

Windows. Windows (Fig. 39) were made of great size with several mullions and with elaborate tracery forming, in the earlier work, geometric forms, in the later, curvilinear or flowing forms. Cusping was used to increase the decorative

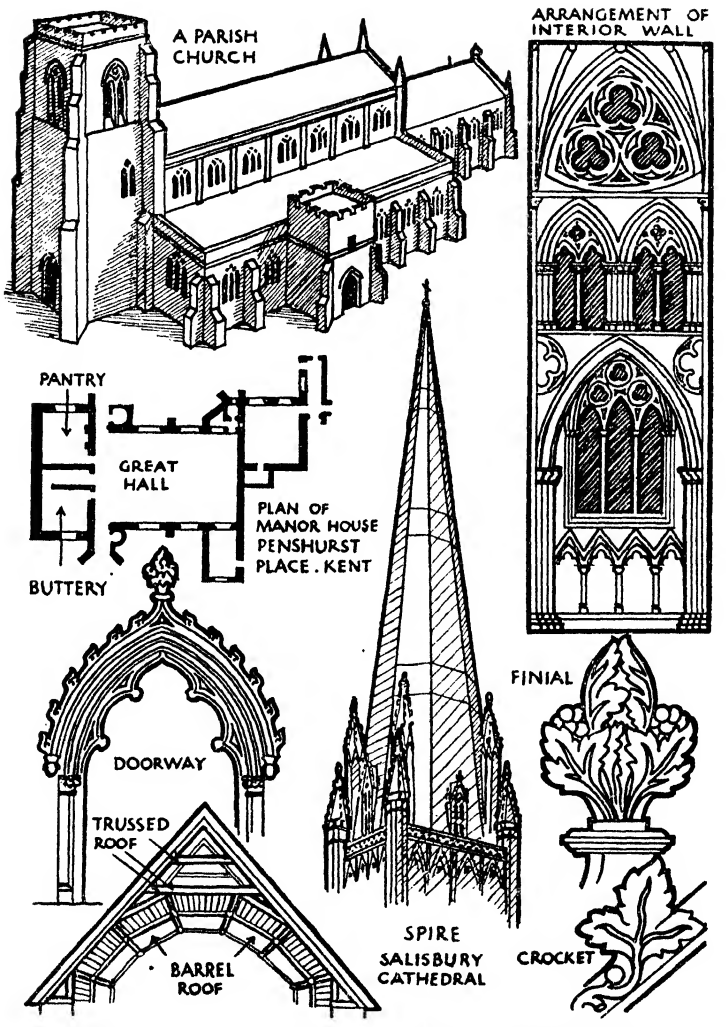

FIG. 40. PARISH CHURCH. BUILDING DETAILS: DECORATED STYLE

effect. The builders were so interested in tracery that wall panelling was decorated with it, and woodworkers adopted the device with enthusiasm. On outer surfaces corresponding richness was secured by the employment of crockets and finials. Rose windows were more often used and may be said to belong to this style; they became large and elaborate examples of tracery.

Openings and Vaulting. Arches were broader and less pointed, and this applies to the heads of doorways (Fig. 40), windows and other openings, as well as to the arcades. The ogee arch (Fig. 39) occurs often in this style. Vaults (Fig. 39) were divided into many panels by ribs which now included *lierne* ribs. These did not start from the springing point, but were junctioned to *springing ribs*. In this way, what are known as *star*, or *stella*, *panels* occurred. The numerous intersections or junctions were made by introducing a boss to receive the ribs; the bosses were richly carved and painted, often with heraldic devices.

Bosses. The object of bosses was not entirely decorative; they do certainly provide articulation in the decoration scheme and they mask the awkward mitres that would occur in the mouldings when ribs meet at varying angles, but they also were a development from the keystone.

Piers and Capitals. Piers were round or octagonal, often lozenge-shaped in plan (Fig. 39), and where clustered columns occur they were attached. The capital (Fig. 39) might be moulded with a concave outline, or carved with foliage in which many natural forms were used. Figure subjects also occurred and incidents were amusingly illustrated. The tendency was for the capital to form a wreath around the pier and to lose the vitality of the upward springing movement of the early English concave form. The abacus followed the shape of the pier in plan.

Mouldings. A similar loss of vitality occurred in the mouldings (Fig. 39), which were less deeply cut and did not follow the "orders" so strictly as before. The roll and quarter-round were frequently used, and there was much use of the fillet. In the hollow moulds there often occurred the typical ball-flower or four-leaved flower (Fig. 39). These were as characteristic of the Decorated period as the nail head of the Norman or the dog's tooth of the Early English period.

Ornament. There was much rich ornament in this style and it was extremely naturalistic in feeling and design. The diaper patterns used as wall textures were more elaborate than in the work of the previous century (Fig. 39). Such features as sedilia, arcades, drip stones, pulpits, fonts and tombs had an immense amount of carving, and the pinnacle with its attendant crockets and finials (Fig. 40) was a favourite unit in the design, as also was the canopy. A peculiarly knobbly meandering form of foliage was often used which foreshadows the textural effect so beloved of the next period, Perpendicular.

Parapets and Towers. Parapets (Fig. 39) and pinnacles, the former often pierced to form a lace-like effect, were used as a finish to the walls on the exterior, and the towers were similarly finished. Where a spire was added—and there are many fine spires of great height—it stood behind this parapet at its base (Fig. 40).

Roofs. The roof, which had become steep in the Early English period, was of a much more moderate pitch. Timber roofs were often trussed (Fig. 40), and, where vaulting was not adopted, were often boarded to give the effect of a barrel-vault (Fig. 40), while ribs and bosses gave much the same textural effect as in the panelled vaulting. It is likely that the trussed roof was introduced to give more height for vaulting; in any case it gives the impression of greater height than the older tie-beam which was, however, still used. Where the roofs were exposed they were richly decorated by the carver and painter.

Woodwork. The woodcarver had much more scope than previously, for such wooden items as screens, font-covers, pews, chests, and chancel seatings were beginning to come into more general use. In these we can detect, perhaps too often, a copying of masonry, both in details of construction and in decorative details. At this period the woodworker had much to learn about the mysteries of stresses and strains and of scientific construction in his own material; but he knew the effect he wished to produce and in this he was magnificently successful. Mastery over technical details of jointing would come in due course.

The Manor House. Although it was still in churches that building might be seen at its best, there were a number of

ambitious dwellings erected. The castle was giving way to the fortified manor house (Fig. 40) and, where the castle still existed, more comfortable dwellings were often built near the central keep. Buildings were usually on two floors, with the hall running the whole height. The hall was made on a larger scale than ever, for it housed the retainers and was the room in which they lived, dined and slept. There were more rooms on either side of the hall than in the earlier periods, evidence of an increased desire for privacy. The house was often enclosed by a moat and entered by a gate-house containing portcullis and drawbridge. In the towns, frequent fires had led to a greater use of stone buildings; these were usually arranged in two stories and were simple in plan. Very few of these buildings remain to-day; for obvious reasons dwellings in a town must change more frequently than in the country.

CHAPTER XIII

PERPENDICULAR GOTHIC

A.D. 1400–1500

THE background of the fifteenth century was one of war and violence. Yet it was a century of progress, for it witnessed the end of the medieval period; and with the founding of the Tudor dynasty in 1485 were established the beginnings of Modern History. The ordinary man began to realize that it was he, and not the over-powerful barons, that represented the true stength of the country. He realized, too, that it was his country that was the central focus of his patriotism, and that, for the moment, a strong king alone could give him a stable and firm central authority that would dispense at least an approximation to justice in an impartial manner.

Defeat in France—The Wars of the Roses. The struggle against France in the early part of the century went well. In 1415 there was the great victory at Agincourt, and in 1420 the Treaty of Troyes was signed. From that time the tide turned against the English. They still won victories, but gradually the French nation was unified and from 1435 to 1453 the English were driven back until Talbot's defeat at Chatillon saw the close of the war. France had become united but England was disunited. A struggle for power amongst the leading families developed into what is known as the Wars of the Roses. For the most part the ordinary man stood by, got on with his own work, and probably hoped that the tyrannical barons and their retainers would exhaust themselves—which, in fact, they did.

Gunpowder, Constantinople, and Printing. Three events occurred in this century that were destined to alter greatly the existing order of things. These were (1) the discovery of gunpowder, (2) the fall of Constantinople, and (3) the establishment of printing in Western Europe. The first rendered castles no longer almost impregnable and meant that a rebel lord could not defy the central government with his previous success. The second caused a wealth of scholarship and learning to be spread by scholars who became refugees. Printing

was the first step to obtain rapid and wide dissemination of knowledge, but it must be remembered that printing was really only worth while if paper could be obtained easily and cheaply.

Decline of the Feudal System. During the period under review the middle classes increased their influence, and wealth became an essential factor in power. The feudal system declined, and the system of employer and employee began to emerge in a clearly cut form. The wool trade continued to expand, and the bulk of the building during this century is connected with prosperous centres of industry. Craftsmen were organized into three sections; the first were connected with the Church and comprised the most highly skilled; the second were the King's craftsmen, who were fairly highly skilled and were sometimes assisted by the Church craftsmen when their services could be obtained. Secular craftsmen did the more routine and humdrum work.

Origin of the Name "Perpendicular." The *Perpendicular* period derives its name from the vertical moulded rib which forms such a feature of panelling and tracery (Fig. 41). Structurally the period marks the absolute peak of the masonry craftsman's skill. The most daring designs were attempted and successfully achieved.

The Wall Structure. By means of piers, deep buttresses, and flying buttresses, the weight and thrust of the roof were held, and the walls existed merely as a weather screen and were of no structural importance (Fig. 41). In many cases the windows were so large that the wall was a tracery of stone in which the spaces were filled with leaded glass. The clerestory windows were also increased in size so that the triforium disappeared, although a narrow band of panelling or statuary sometimes separated the clerestory from the nave arcading (Fig. 41).

Vaulting. In vaulting the most striking feature was the employment of fan tracery (Fig. 41). Brilliant and beautiful effects were obtained, particularly when pendants were introduced. Structurally, however, the tracery was somewhat false, for a return to the Roman method of vaulting was made, and a rib was often cut in the same piece of stone that formed part of the panel. Ribs were used functionally at times, however, but then they were frequently built in for strength

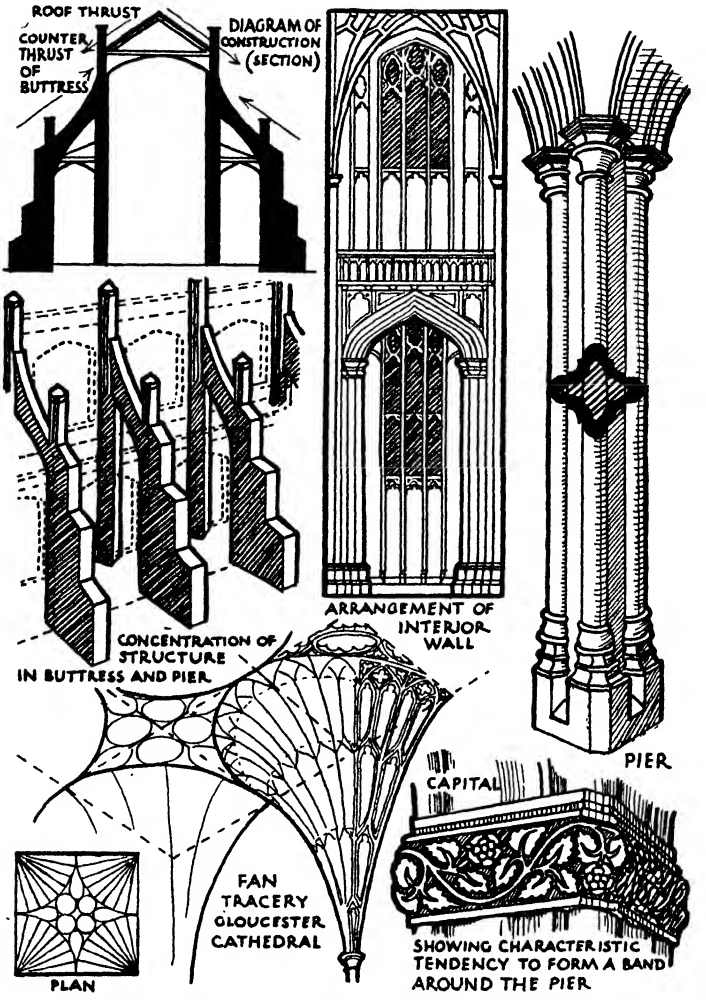

FIG. 41. FEATURES OF THE PERPENDICULAR PERIOD

and were not seen. They often acted as supports for the pendant (Fig. 42). It is clear that decorative effect was placed before an expression of construction, and that this decorative effect was secured by developing what were previously constructive elements, but forgetting their real purpose.

Windows. The window arch grew wider and more depressed, and the four-centred arch was more and more popular. The space above a line drawn horizontally from springing point to springing point was filled with a compact pattern of tracery (Fig. 43). The space below was divided into long upright "perpendicular" spaces by mullions. These vertical panels, with their neat little cuspings at the head, were often introduced on a smaller scale into the tracery at the top (Fig. 43), while in large windows horizontal transomes acted with the mullions to turn the window into a series of small panels.

FIG. 42. VAULTING PENDANT

The Perpendicular Panel. This panel motif was used as decoration on walls, pinnacles and buttresses; and on doorway and window jambs. It was used in woodwork as well as in stone. In wood it became a more logical construction as the ribs formed the framework. The depressed, four-centred arch was used as a heading for all openings, whether for the arches forming the nave, for the arcade, or for doorways. The general feeling of the style is of approach to squareness, almost as though a trabeated form was desired with arched construction.

Piers and Capitals. The slender piers often had four attached columns with mouldings between (Fig. 41); these mouldings were frequently carried on to the arch without an intervening capital and abacus. The piers were often lozenge-shaped in plan, the capitals being frequently polygonal, and the carved ornament tightly packed with a horizontal movement reminiscent of a wreath (Fig. 41).

Mouldings. Mouldings were less deeply cut, and instead of following the lines of the "orders," they followed the general angle of a jamb.

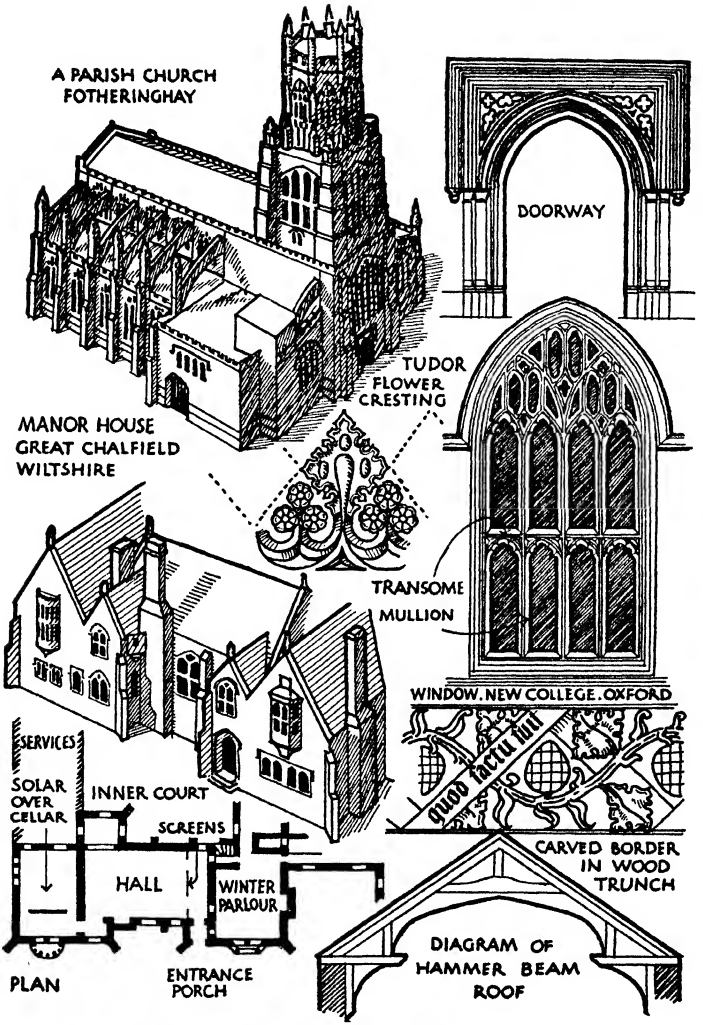

FIG. 43. BUILDINGS AND BUILDING DETAILS IN PERPENDICULAR STYLE

Ornament. A feature of all perpendicular ornament is its compact and tightly crowded effect. It is amazingly rich, and when coloured and gilded gives most happy results. The most typical ornament is the Tudor flower ornament, really a cresting (Fig. 43). In the place of the decorated ball flower, a square-shaped motif leaf or flower, carved in a fussy but very rich manner, appeared (Fig. 44). The vine, rose, and strawberry were amongst the most popular plants used in carving, but many other sources were drawn upon. The treatment would be fairly naturalistic if it were not for the rigid placing of details (Fig. 43) and the attempt to make them fit triangular or square shapes. There is also a certain "knobbly" treatment, which gives an extremely rich textured effect in the mass.

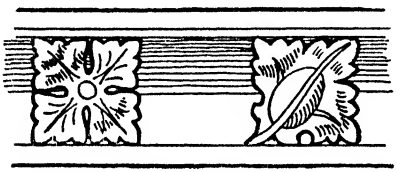

FIG. 44. SQUARE LEAF BORDER

Buttresses, Parapets and Pinnacles. The flying buttress was more used at this period than at any other, being richly treated by piercing and carving into traceried designs. This treatment is also given to parapets, which, because of the lowered angle of the roof slope, became more apparent, their lace-like effect contributing much to the exterior appearance. Pinnacles often had elaborate panelled carving and were richly decorated with crockets and finials.

Roofs. The woodworker was not to be outdone by the mason in showing off his craftsmanship, and a great amount of very beautiful work of this period remains to-day. The open-timbered roofs are a feature and the hammer-beam roof (Fig. 43) should be well studied from a structural as well as a decorative viewpoint. The brackets, which formed an essential part of the hammer-beam construction, were often carved into figures of angels. Sometimes fan-tracery vaulting was carried out in timber. Rood screens, and the wooden furniture slowly coming into more general use, provided more examples by which the craftsman's skill could be demonstrated.

Towers. There were not so many churches built in this century as previously, but one of the most attractive features in those that were built was the tower (Fig. 45). These

towers were high, and in some cases seemed to dwarf the church itself. They were divided into many stories, the spire was less used, and much was made of the design of the parapet and pinnacles.

Sometimes a small tower was placed on top, and made a rich feature with flying buttresses (Fig. 43). Many churches were altered and reconstructed at this time.

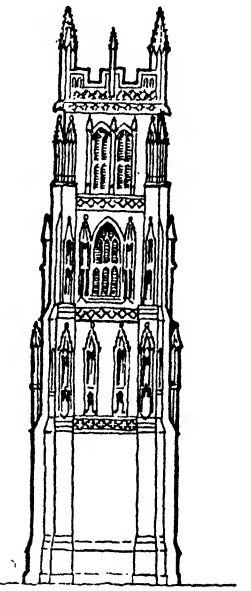

FIG. 45. CHURCH TOWER: HUISH EPISCOPI SOMERSET

The Manor House. If there were fewer churches built at this time there were many more secular buildings. The old fortress, since the discovery of gunpowder, was of little practical use, and those who could afford it now wished for a much greater amount of luxury. The manor house plan was developed to include more rooms, and although the hall remained as the great central meeting place and dining room, a greater desire for privacy led to more bedrooms being provided. Other buildings of this time include Guild halls, hospitals, schools, almshouses, as well as inns and smaller dwellings. In these, stone was generally the most used material, but in those districts where stone was not easily quarried, and timber was plentiful, this material was more often used, particularly where the existence of clay made it possible to manufacture bricks. Where timber was plentiful, there were many ways in which the spaces in the framework of a building might be filled.

SECTION V
FROM GOTHIC TO RENAISSANCE

CHAPTER XIV
THE PERIOD OF TRANSITION
A.D. 1500–1600

THIS period covers that of the Tudor Dynasty and is often divided into (1) *Tudor*, 1485–1558, and (2) *Elizabethan*, 1558–1603. Tudor building may be regarded as the closing stages of Gothic, and Elizabethan as the opening phase of Renaissance. Renaissance is the name given to an entirely fresh viewpoint on mankind's way of living, based on a re-discovery of the cultural achievements of Ancient Rome. It affected every activity of the Western world, particularly as its origin lay in the world of the mind. This new way of thinking is known as humanistic, and St. Francis of Assisi (1182–1226) is often regarded as the earliest of men to see things in this new light.

The Renaissance (new birth) began in Italy quite two hundred years before it reached this country, but its influence was apparent during the whole of the sixteenth century.

The Policy of Henry VII. After the Battle of Bosworth, when Henry VII became king, his position was by no means secure, and the main aim of his reign was consolidation. The over-powerful aristocracy, with their private armies of retainers, had to be subdued, and their power over local justice curbed. The Court of the Star Chamber was instituted. By a system of vigorous taxation and fines, Henry built up a strong financial position. He had married Elizabeth of York in an effort to bring the two rival sides together, and later arranged dynastic marriages for his children which in time produced some unlooked-for results. Perhaps the most important happening was the origin of the principle of the "Balance of power in Europe" as England's foreign policy. By this England became politically the most important

country in Europe, although seldom if ever the most powerful. For the balance of power to be successful, however, it was essential for England to maintain herself as a great sea power.

Henry VIII and the Reformation. Henry VIII may be said to have continued his father's policy. Under Wolsey's guidance the balance of power crystallized, and efforts were made to advance English influence in the Vatican at Rome. In 1530 Henry dismissed Wolsey, and for the remainder of his reign

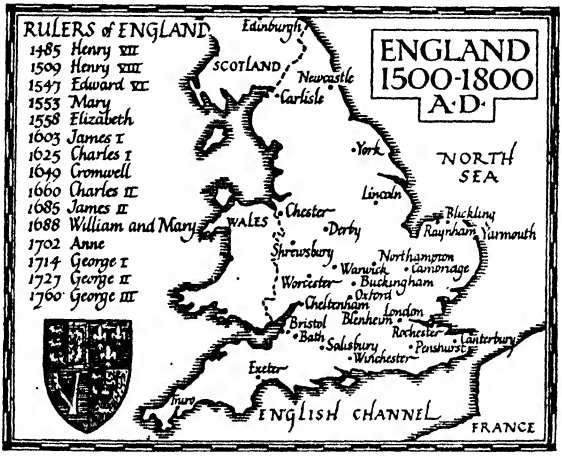

FIG. 46

took full control of state affairs. He carried out a further step in what is known to Protestants as the Reformation, by his break with Rome, but the rising feeling of nationalism had much more to do with this than the question of the "Royal divorce." It was this nationalist feeling all over Western Europe that became a feature of this period of history. Instead of a horizontal ruling of king, barons, freemen and serfs, vertical national divisions arose and people became conscious of belonging to a nation instead of to their particular "caste" or class.

The "Via Media" Religious Solution. At the end of the reigns of Edward VI and Queen Mary I, England was in an extremely weak state. During Mary's reign the country had

become almost a colony of Spain. Yet these years were not without importance, for they taught the country exactly where lay its strength and its dangers. Queen Elizabeth saw clearly that her most powerful support was to be obtained from the new middle class, the squires and commercial classes, and that in religion the *via media* was the only policy that could unite the nation. By this solution of the religious question, England avoided the religious wars that disturbed the continent so bitterly.

Elizabeth. In her foreign policy Elizabeth had to tread warily. It was absolutely essential to secure peace for a period so that the country might renew its strength, since war was ultimately inevitable. Spain, France and England faced the Atlantic, and it was one of these three nations that would become the centre of the new world that had been opened up by geographical discoveries. The Queen played Spain and France against each other until in 1587, after Mary Queen of Scots was beheaded, Spain could temporize no longer and prepared the attempt to invade and subdue this country. The destruction of the Armada in the following year set the seal upon England's future, although in the sixteenth century she was not in a position to exploit in a material manner the great victory that had been secured. By basing the policy of the country on the sure foundation of trading relations backed by sea power, future progress was assured, especially when compared with the policies of expensive aggrandisement pursued by her rivals. Yet Spain secured a long lead in South America, and it was only in the northern regions of the new continent that colonization could be effected by any other nation.

Foreign Trade. In all parts of the world merchant adventurers were laying the foundations of the future trade of this country. In Moscow, Persia, India, China and Japan there were markets and trading centres.

The Rising Middle Classes. The home policy of the Tudors had been to break down the power of Baron and Church and to assert the power of the Monarchy. To do this, they had relied on the rising middle classes composed of country squires and the traders and commercial classes. It was the representatives of these that formed the House of Commons, and under the Tudors they learned the intricacies of government and

realized their power. These classes had profited greatly from the dissolution of the monasteries, and were strong enough to retain their possessions during Mary's reign. They saw the advantages of education, and their sons were well trained to hold responsibility in Church and State, Law and Commerce. They became merchants and traders, and, seeing where profit was to be made, planned to obtain it. Many served apprenticeships and so became influential in industry. Thus the main stream of the country's progress was controlled by a virile, well-educated, adventurous and individualistic class, at a period when all these qualities had ample opportunity.

Elizabethan Culture. A brilliant flowering of culture took place under Elizabeth. In music, literature, and in most of the arts, England became noted. It was a culture true to the people and not merely superficial. The people made their music in their homes and churches, literature was of a popular variety, and the drama was performed in the tavern, hall or theatre (Fig. 50). In painting, a demand for miniatures and small portraits developed a popular, practical art.

Problem of Unemployment. Although in general, the sixteenth century was a time of growing prosperity, there was much social upheaval, particularly in the earlier half. The refusal to countenance the private armies of the more powerful barons threw these men out of work, and the dissolution of the monasteries swelled the ranks of the workless. It became difficult to distinguish between the genuine case of hardship and the "sturdy beggar." Several laws were passed to deal with the problem, but the most important and lasting was the Poor Law of 1601, near the close of Elizabeth's reign (1603).

Generally, however, life was getting easier for all except the very poor. A much more settled mode of living was possible. In the past most large buildings had been either military or religious in their conception: now buildings could be designed first and foremost as homes. Gunpowder could deal with fortifications, and the country was well supplied with churches. Many of the monastic establishments were allowed to fall into decay, or were converted to secular uses such as farm houses or schools.

Foreign Influences on the Building Craftsman. In the early years of the Tudors under Henry VII, and in most of the reign of Henry VIII, Italian workmen were engaged to work

in this country, and one may often come across details, executed in the pure Italian Renaissance manner, in buildings which in spirit and construction are a continuation of the Perpendicular style. Later, Flemish and German craftsmen made their way to England to avoid the rigours and hardships of religious wars and persecution. This gave another version to the Renaissance details which, no doubt, by now were regarded by the English craftsman as the latest fashion. So the decorative detail of the late Tudor, Elizabethan and Jacobean Period which followed, is distinguished by a muddled treatment of classic motifs. Yet it is a strong and sturdy rendering, and is by no means without charm, possessing individualistic qualities and great sincerity. For it was the English craftsman's own treatment of the motifs which were at hand, and not merely the execution of a design dictated from above. He had not as yet declined from the status of a craftsman to that of an artisan.

CHAPTER XV

THE TUDOR OR LAST PERIOD OF GOTHIC

A.D. 1485–1558

THE few religious buildings erected in this period were very similar to those of the Perpendicular style. Arches were even more depressed and the windows contained more transomes. Ornament was used very liberally, and a vaulted roof was often a maze of complexity, with fan tracery and pendants.

The Manor House. Churches, however, were conceived in the vein of what had gone before, and it is in the dwelling that we see progress in building ideas. Large houses were erected for the wealthy merchants who were rapidly rising in power, and for the new nobility which formed Henry VIII's Court. The general plan (Fig. 47) was to build around a quadrangle which formed a central court. Many more rooms were now provided and although the hall was retained it was no longer the dominant feature. Most of these houses were two floors in height. The hall usually ran up the complete height, however, and in the towers and architectural features further rooms were incorporated. Many of the defensive elements in the design were still to be seen, such as battlements, gate-houses, towers, etc., but their purpose was almost wholly decorative (Fig. 47).

Brickwork. Brick, a building material which had only a limited use previously, now became popular, and the craftsmen delighted in making patterns with the varied brick colours (Fig. 48). Brick was often combined with stone in the exterior walls. Particularly typical of the period are the very elaborate chimney stacks (Fig. 47), built of patterned and moulded bricks and often grouped to form interesting arrangements.

Windows. Another feature was the "oriel and bay" window (Fig. 47), which formed an attractive design both internally and externally. Domestic windows consisted of a number of rectangular shapes formed by the stone framework of mullions and transomes. These small windows were now made to open and were our first casement windows. Glass was used, and as glass was at this time obtainable only in small pieces, being

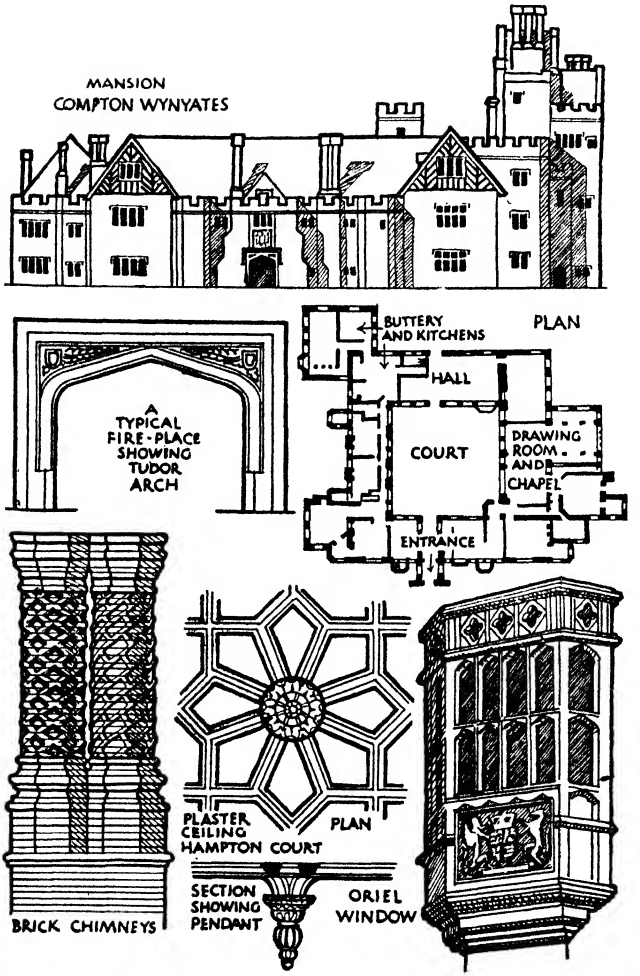

FIG. 47. TUDOR DOMESTIC BUILDING

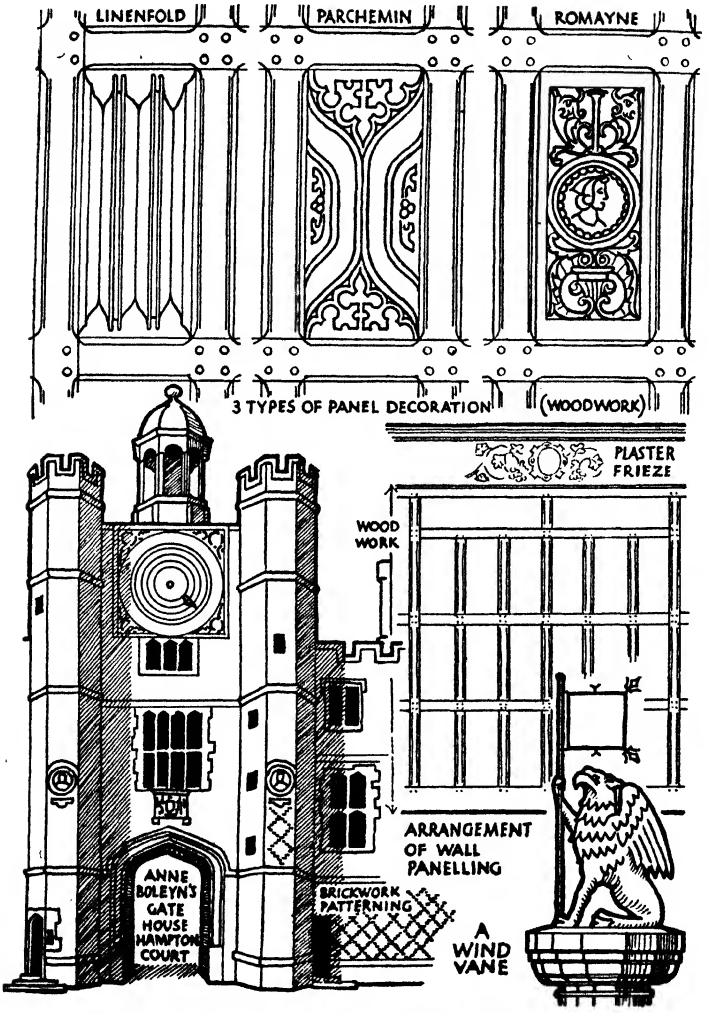

FIG. 48. DECORATIVE EFFECTS IN TUDOR BUILDINGS

cut from the circle made by the process of blowing, it had to be joined together by *cames* of lead to form a rectangle. The central part of the glass, the "bullseye," was looked upon as a faulty piece in those days. The section of the mullions and transomes now became convex and not concave as had been the case in medieval building.

Walls and Openings. Walls were very much in Gothic style with plinth and parapet, buttresses and gables. The doorways were headed by a lintol with a sub-arch, the spandrels of which were filled with carving usually of an heraldic nature (Fig. 47). Openings were usually surmounted by a hood moulding.

Interior of the House. The rooms in a house generally communicated directly one with another, and not by the use of passages as a means of private access to an individual room. Elaborate open-timbered roofs were still in use for bridging wide spans, but elaborately panelled wooden ceilings were often used, and it was from these that the plaster panelled ceiling (Fig. 47) originated, influenced also by the fan and pendant vaulting.

Panelling. The interior walls continued to be decorated by tapestries and painted cloths. Timber panelling, however, came to be used more and more as a wall covering. The panels themselves were small, seldom over a foot wide, and thus joints in the panels were avoided. Three main types of decoration occurred in the carved panel: (1) the *linenfold*, (2) the *parchemin*, (3) the *Romayne* (Fig. 48); but often the panels were plain. Mouldings were worked on the framework, and at first occurred on the sides only, the edge nearest the base of the panel being chamfered. Later the top edge had a moulding worked upon it, and finally the mould was worked entirely around the panel.

Ornament. Ornament may have been somewhat muddled, but it was certainly rich and well-beloved (Fig. 48). Lead rain-water heads, wrought-iron hinges, stained-glass, plaster ceilings, fire-places, fire-backs, stone finials, all were joyously designed, and the almost constant use of heraldry was a unifying influence.

CHAPTER XVI

THE ELIZABETHAN PERIOD

A.D. 1558–1603

THE continuing and increasing use of Renaissance details, together with the more symmetrical arrangements and planning, justifies the classification of the building of this period as Renaissance. As in the Tudor, and for much the same reasons, the chief activity of builders was with domestic architecture.

The Architect. It is at about this time that the architect began to appear as the controller and designer of buildings. Previously, someone had to be responsible for the main scheme of a building, and as stone was the great building material of medieval times, the master stone mason must have had much to do with the design of the structure. The medieval church served as a great centre for what we would to-day term professional men, and there were no doubt many who could co-operate with the craftsman in producing the general arrangements of the many ecclesiastical buildings, from great cathedrals to small churches, as well as the numerous abbeys and monasteries. It is unlikely that elaborate architectural drawings were produced to show every minute detail, both in construction and decoration. The craftsmen possessed a tradition and a feeling that enabled them to carry out the idea of their employer as though that were a very part of themselves. This understanding continued until comparatively recently, and was taken into account by architects until at least the end of the eighteenth century; it is with the coming of the Renaissance, however, that the architect really begins to stand out as the designer of the building as a whole, and the craftsmen become more and more subordinate to him.

Planning of Large Houses. The more modest houses continued to be arranged with the hall as the central feature, and a number of smaller rooms arranged on one or both sides. The larger houses, however, which were previously arranged around a quadrangle, often take, in this period, an "E" or "H" shaped plan by leaving one side so that the quadrangle

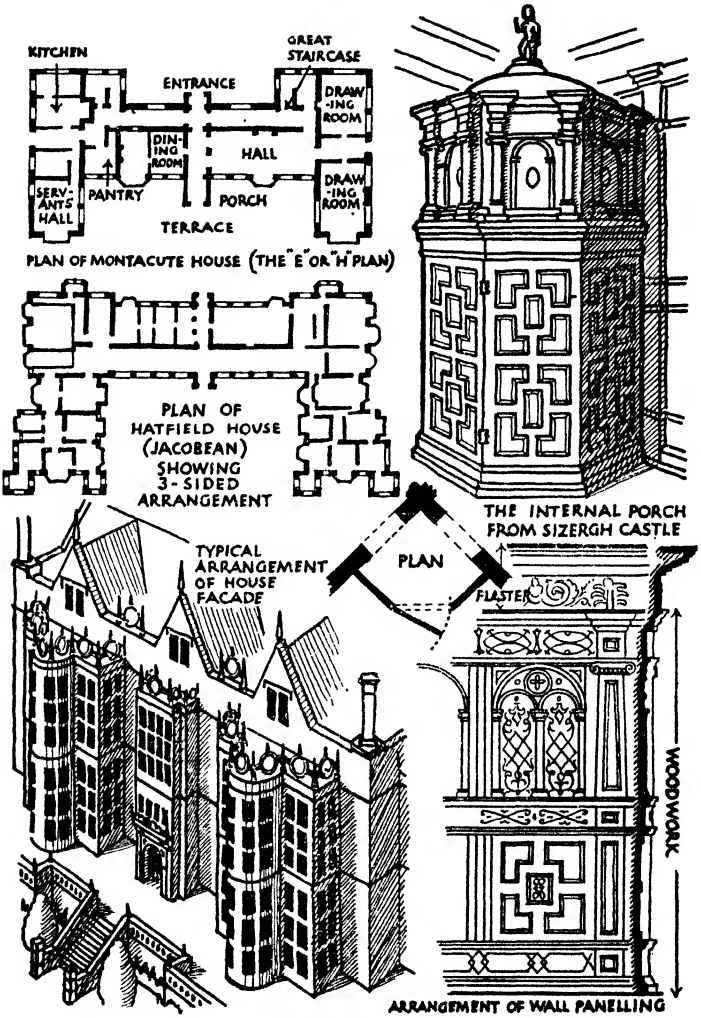

FIG. 49. ELIZABETHAN BUILDING: DEVELOPING STYLES

is not entirely enclosed, and more light and air can thus be admitted (Fig. 49). It was the gate-house front of the building that was omitted, though the actual gate-house was built as a central feature in a few cases.

The Staircase. The hall was still retained as a centre for gatherings and festivities, and the staircase, which now became a prominent feature in the internal design, led from it to the many upper rooms. Previously the staircase had a very small part in the architectural design.

The Long Gallery. The "withdrawing room," the old "solar," became an important room and was often of considerable size. A great new feature was the long gallery. This was often of great length, forming a place where paintings and other possessions could be displayed, and also served as a link between the two sides, or wings, of the house.

The Internal Porch. There were often many rooms and these were not yet connected by passages. To secure some privacy a device was used known as the *internal porch* (Fig. 49). This was placed in the corner of a room and formed a screen which concealed two doors and contained a door through which access could be gained to the room proper. The retainers had now developed into a definite domestic servant class, and separate quarters were provided for them. The method of arranging these two little worlds within one house presented a problem in the building of all future large houses.

Woodwork and Decoration. In the woodwork there was much carving and an increased use of panelling, often forming more elaborate geometrical arrangements than the straightforward rectilinear framework of stiles and muntins (Fig. 49). This, with such features as the staircase and internal porch, gave the woodworker or "joyner" ample opportunity. The panels were at times decorated with inlay (Fig. 50), and semicircular arcading (Fig. 49) sometimes formed part of the framework. Instead of the panelling forming an unbroken texture on the wall, this surface was often divided by more or less crude renderings of the classic pilaster with plinth, capital, frieze and cornice (Fig. 49). Side by side with rough decoration using the classic scroll-work, appeared the strap-work so typical of this and the Jacobean periods (Fig. 51). This strap-work was used enthusiastically in all forms of decoration; the mason used it for a cresting over his oriel windows, in panels,

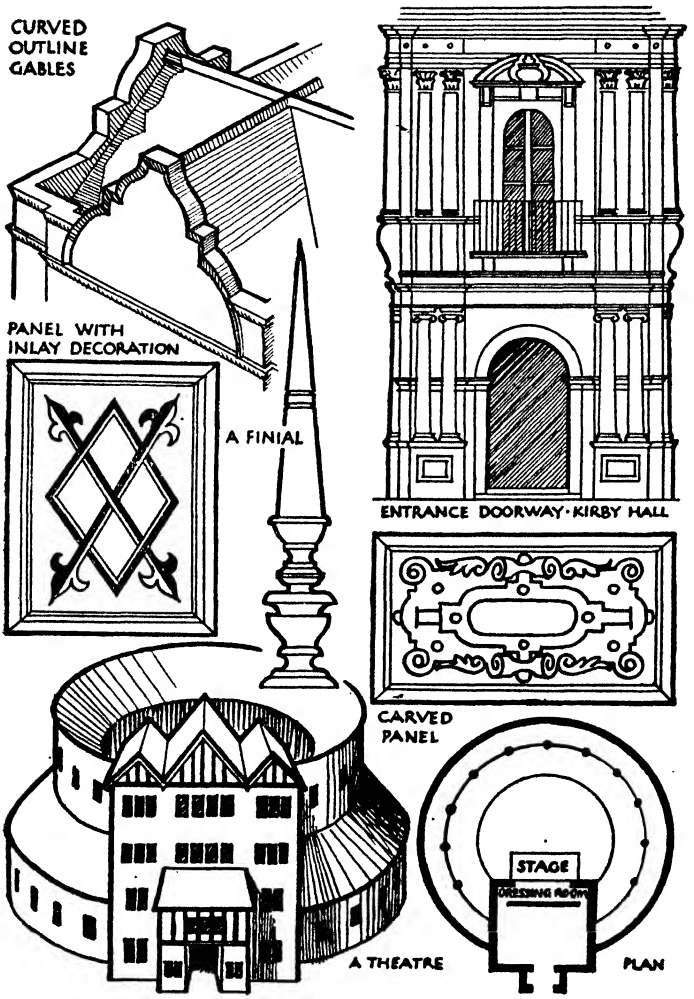

FIG. 50. ELIZABETHAN DECORATIVE DETAILS; AND THEATRE

and in his monuments for which the period is famous; it was used very frequently in plaster work, especially in the elaborate ceilings and fireplaces which became so popular; the "joyner" also used it in his work, whether for church or secular purposes.

Building Materials. As mentioned earlier, the materials used varied in different parts of the country according to their availability. Roofing materials would be sometimes of stone, sometimes of slate, and sometimes of tiles. Wood and lead were used, but less frequently than in the past. Where timber was available but not brick, lath and plaster was used to fill in the framework. These methods had been in use for the small farmhouses and cottages for centuries past; it was at this period, however, that these materials were adopted for large houses. The influx of Flemish and German refugees led to a further series of details of foreign origin with which the builder might indulge his fancy; while Spanish and French influences constantly were present as the Queen deftly played these two powers one against the other. Of these details the one that took the firmest root was the decorative treatment of the gable outline (Fig. 50).

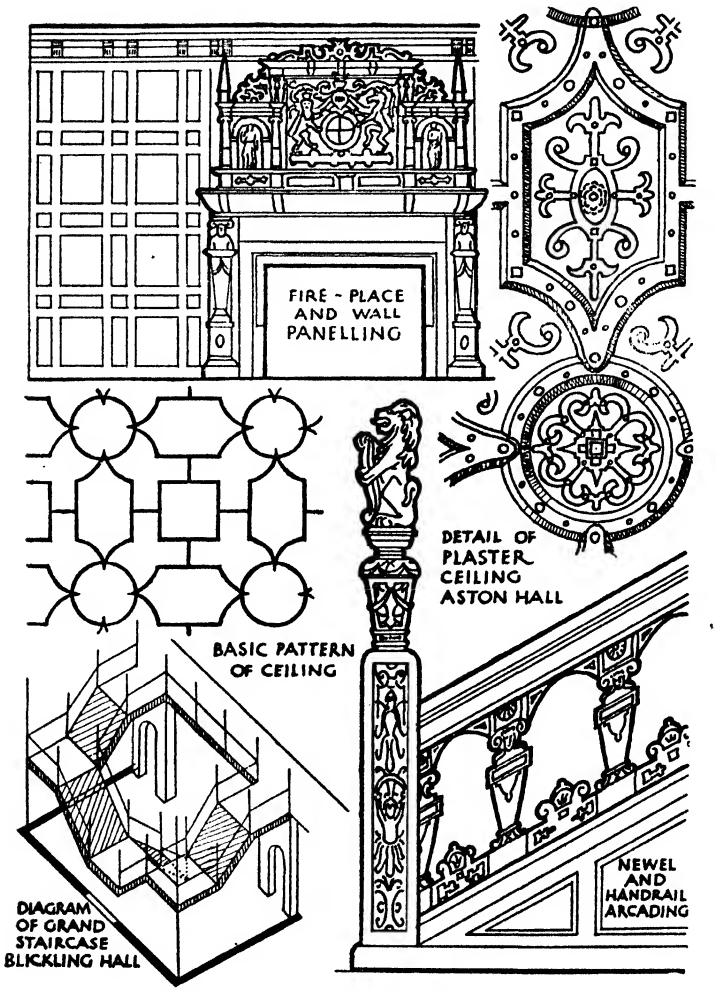

FIG. 51. JACOBEAN INTERIOR DECORATION

CHAPTER XVII

JACOBEAN

A.D. 1603–1625

THE transition carried on well past the end of Elizabeth's reign, and this closing period is known as *Jacobean*. The work of the Jacobean period does not blend smoothly into the English Renaissance, which seemed to appear almost suddenly

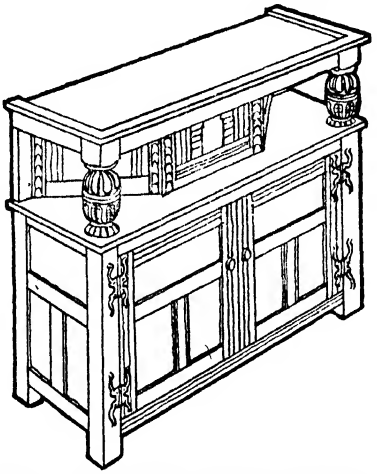

FIG. 52. JACOBEAN COURT CUPBOARD

and to overlay the dying Jacobean style. So many fresh details of design and planning arrived almost at the same time that there was a distinct break at this point.

Jacobean work was little different from late Elizabethan. There was a more correct use of classic detail, yet many such features as panelling got more involved. The type of moulding which was "planted on" came to be used at this time and most complex results were secured by the various arrangements of moulded panels (Fig. 51). Woodwork on staircases was elaborately worked and the carved newel post finials were a prominent feature (Fig. 51).

Furniture had been used on an increasing scale since the fifteenth century and the homes of the wealthy were by now quite elaborately furnished. The chest had been raised on legs, and its openings put at the front so as to form a "hutch" or cupboard. The court cupboard of Elizabethan or Jacobean period is a very typical piece (Fig. 52). Great draw tables

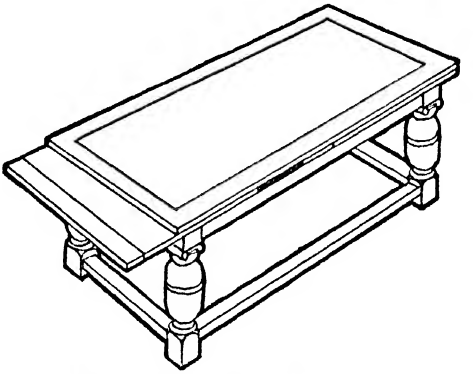

FIG. 53. JACOBEAN DRAW TABLE

with bulbous legs are also well known (Fig. 53). Chairs were still a sign of authority, and the bench was still used for seating. There was little in the way of floor covering, although carpets and rugs were coming in now from the East. Buffets or side-tables were used for serving the food, and it was from these that our "side-boards" originated. "Turning" was used especially as a decorative feature during Jacobean times.

SECTION VI
ENGLISH RENAISSANCE

CHAPTER XVIII

THE SEVENTEENTH CENTURY AND THE DEVELOPMENT OF RENAISSANCE BUILDING

We have learned that Jacobean building was a continuation of Elizabethan, and buildings were erected in Jacobean style until well past 1650. It may be said, however, that little building was done in any but the classic manner after the Restoration. As remarked earlier, the full Renaissance did not blend directly with the earlier style, but ran side by side with it from about 1625 to 1660. From that date till the end of the century the great flowering of English Renaissance architecture took place under Sir Christopher Wren, and the style was continued as a national and traditional style until well into the nineteenth century.

Struggle between Crown and Parliament. The seventeenth century witnessed a long struggle between Parliament and Crown which was settled by the Revolution of 1688 after the Parliament had demonstrated its power in the Civil War, forty years before. The Commons had become restive during the closing years of Elizabeth's reign, but she had used great tact, and was conscious that the Crown stood as the symbol of the rising sense of national patriotism; thus she had always enjoyed the loyalty of the House. James I and Charles I had not the Tudors' political sagacity, and relations between Parliament and ruler became strained. Comparing themselves with the exalted and ostentatious continental rulers, and asserting the doctrine of the Divine Right of Kings, friction was bound to arise. For although their subjects were growing increasingly prosperous and were intensely patriotic, they had a strong feeling of independence, and this was especially manifest in the religious outlook. The future of the country

they felt lay in Protestantism; Roman Catholicism was identified with Spain and France, and religious persecution in Mary's reign was not forgotten. The Stuarts were reputed to have Catholic sympathies, and the reforms under Laud, harmless and well-meaning though they had been, to many people were suspect. The new class of merchants and yeomen farmers were prepared to maintain their rights and privileges, and Civil War broke out in 1642. After a severe struggle Parliament was successful, but chaos followed, and after the execution of Charles I circumstances drove Cromwell to rule as a dictator until his death in 1658. Little more than a year later came the Restoration of the monarchy, when Charles II returned from exile in France. He, although perhaps the least worthy of the Stuarts, was a man of natural sagacity, and his actions showed that he was determined to keep the Crown on his head, and that head on his shoulders.

His brother, James II, was less cautious and outraged the feeling of the country. In 1688 the Protestant William of Orange was invited to the throne, and James fled; but William and Mary II had to rule on terms laid down by Parliament.

Foreign Policy. The foreign policy during the century was concerned chiefly with France, Spain and Holland. At the close of the century, it was clear that France was the outstanding power, and Holland was allied with Britain against her. The power of Spain and Portugal had declined. The Netherlands had secured their freedom, and for a brief spell had made a determined bid for mastery in sea power.

Increasing Prosperity. Generally, the outlook was much more sober and less wildly adventurous than in Elizabeth's time. Puritanism, together with a wider education given by the new schools, which engendered a real knowledge of the Bible, had much to do with this change. There was also a great movement of emigration, partly, but not wholly, through religious persecution. In Virginia and New England settlements began, leading to colonies from which the United States was to arise; and the West Indian colonies were also rapidly developed. A steady increase in overseas trade went on, with a corresponding growth in the influence of the commercial interests of the City. In 1699 the Bank of England was founded. It accepted deposits and made loans

to enterprising people for the purpose of trade. The "Mercantile System" so established aimed at developing exports, and as a result the country became increasingly prosperous. The growth of the woollen trade, and the improvement in agriculture, gave more employment, and the Settlement Laws helped to create a more stable working of the Poor Laws. There was a steady improvement in the standards of living. Building always thrives under such conditions, for it is essentially an industry which mirrors the life of the people.

Foreign Influences in Building. Whatever their failings, James I and the Stuarts were great patrons of learning and the arts, and their policies brought this country into close touch with those parts of the Continent, Spain, Italy, and France, in which the Renaissance was much more fully developed. At the close of the century, there came, with the accession of William and Mary, a strong Dutch influence.

The Renaissance. In Italy the Gothic style had never taken very firm root, and there was a fairly constant interchange of ideas with the Byzantine Empire. The Italians had not the climatic conditions which encouraged the Northern enthusiasm for Gothic, and the Classic influence continued to be strong. Gothic methods of construction were used, but not developed to the extent of the later periods of Gothic in this country, where walls became almost a screen of glass. In sunny Italy there was less need of large windows for natural light.

Interest in the achievements of classic Roman architecture had been occasioned by the rediscovery of Classic literature, amongst which were books on architecture. Beginning first as an intellectual revival, it is not surprising that results in practical fields followed fairly rapidly, especially as the discovery of paper-making "mass produced" gave an impetus to printing and afforded such excellent opportunities for this knowledge to be disseminated. It was not merely a spirit of ancestor worship that was abroad; it was a re-birth of inquiry and discovery.

Thus although the superficial forms and details of classic Roman building were employed, they were organized and developed to meet new problems, and the structural methods and devices that had proved their usefulness were not

neglected. Renaissance architecture was not concerned with imitating the old, but in developing a new style.

The work upon which the Italians based this new style was that of which they had so many examples at hand; therefore the details were essentially Roman in character and it was the Roman Orders that were used as a basis.

James Thorpe. It has been explained that the influence of the individual architect became apparent from the beginning of the Renaissance. The work of James Thorpe is to be particularly noted during the reigns of Elizabeth and James I.

Inigo Jones. The first architect of the full Renaissance in England was Inigo Jones (1573–1652). Two of the buildings designed by him are the Queen's House at Greenwich and the Banqueting Hall, Whitehall (Fig. 54). This latter building was but a small part of a tremendous project, which would have given London a series of Government buildings comparable with anything on the Continent. Financial difficulties and the Civil War caused the abandonment of the scheme. Inigo Jones had studied in Italy, and the style which he brought back to England was known as *Palladian*, from the name of a leading Italian architect, Palladio. In Jones' hands, however, the adapted style became very English in character.

The Renaissance House. Let us now examine the features of a building such as one of those mentioned above. The plan (Fig. 54) is rectilinear and the more broken "E" or "H" shape, with wings, is discarded. The hall is smaller and becomes an "entrance room" around which the other rooms of the house are arranged. This planning largely removed the need for passages. The staircase remained an important feature, if not as overpowering as in the Jacobean style. It bore a correct relationship with the rest of the house, and this is in accord with the spirit of Renaissance design. Each detail plays its allotted part in the design of the whole, no more and no less. There is evidence of the more studied standards of living in the provision of a dining room, library, morning room, drawing room, etc. The servants' quarters are set off separately in the same block by means of a small "service" staircase, which connects the upper floor with the basement—the servants' quarters—with discreet doors opening to the much more stately floors of the house "proper."

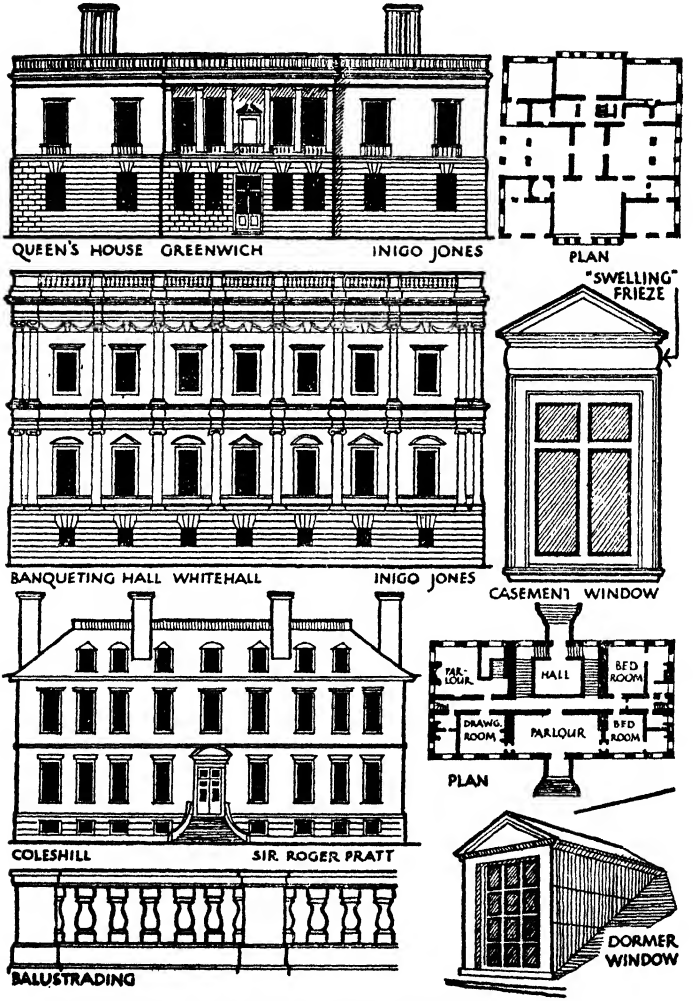

FIG. 54. RENAISSANCE STYLE: SEVENTEENTH CENTURY
Two examples of Inigo Jones's work; and a country house of the period.

The Exterior. Externally the elevations are symmetrical (Fig. 54). The wall is arranged into three horizontal divisions corresponding with the entablature, column, and podium of the classic orders. In the façade the column motif was frequently used either as detached columns supporting a roof over a balcony (as in the Queen's House at Greenwich), or as attached columns or pilasters. These are surmounted by an entablature, which is included in the middle portion of the wall. The cornice of this forms the articulating break between this central wall and the parapet which hides the rather low pitched roof. The lowest part of the wall is often given a feeling of strength and stability by various types of rustication which emphasized the masonry structure at the base. Chimneys were grouped together in a stack, the design of which was quiet and dignified.

Windows. Windows pierce the walls at regular and carefully studied intervals. Originally these were casement windows (Fig. 54) with leaded glass, but many were replaced by sliding sash windows (Fig. 55) with well-proportioned panes. When the sash window was introduced after the Restoration, the sashes were set into wooden frames very near the outer surface of the wall. The window opening had an architrave at the sides and top which often was crowned by a cornice with or without a pediment. At the base was a moulded and projecting sill, a distinct break from the Gothic where the sill never projected. In the rusticated base the openings are plain, but a keystone motif articulates the head (Fig. 54).

The Country House. Although it has been mentioned that the low pitched roof of a building is often hidden by the parapet, many houses, especially in the country, where less formality was required, were built with a steep projecting hipped roof with a supporting cornice or plaster cove. A series of dormer windows often projected from the roof, carrying up the line of windows in the wall (Fig. 54).

Walls. Structurally, the wall carried the weight. Openings were of smaller area, and therefore there was no need for buttresses. A little variety was sometimes given to the wall surface by advancing a central portion very slightly (Queen's House, Fig. 54). The Roman practice of superimposing one order upon another was occasionally employed (Banqueting

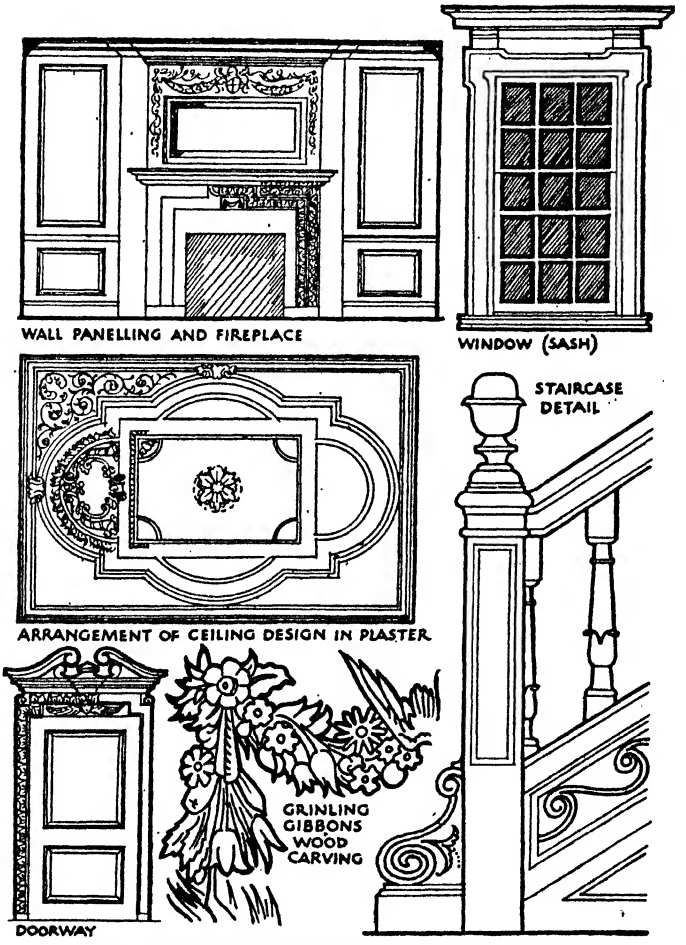

FIG. 55. SEVENTEENTH CENTURY INTERIOR DECORATION

Hall, Fig. 54), but in any case an order never occupied more than two floors. Walls were built of stone or brick, but until Wren popularized the use of plain brickwork, this material was normally covered with stucco.

Wood Panelling. For the interior decoration wood panelling on the walls and plastered ceilings became even more popular, but they were treated very differently from what had been the case hitherto. The wooden panels were greatly increased in size and were arranged in a fairly severe and carefully considered manner, in order to repeat the three horizontal divisions previously noted on the external wall. The framing mould was of the type known as *bolection* (Fig. 56), that is, projecting outward from the wall surface. The widths of the panels usually made jointing necessary; this was due partly to a shortage of oak which was then required for ship building, and partly to the Palladian desire to eliminate the textural qualities of the material by the use of paint, so that woods such as pine were used. In some cases the wall panelling was of plaster.

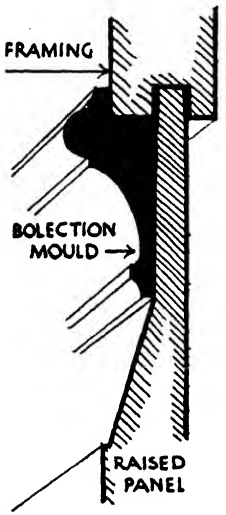

FIG. 56. BOLECTION MOULDING

Ceilings. The plaster ceilings (Fig. 55) were arranged to contain large central panels upon which were painted the typical mythological decoration of that period of the Renaissance; around this large panel were placed small compartments of scroll-work.

Fireplaces. The fireplace continued to be the central feature of the room and was normally treated so that the upper part or lintol formed an entablature supported at the sides by pilasters or columns. The wall panelling was arranged over the fireplace to form an important panel (Fig. 55). It was therefore considerably less in height than in the transition style.

Sir Christopher Wren. From the Restoration (1660) onwards, and well over into the opening years of the eighteenth

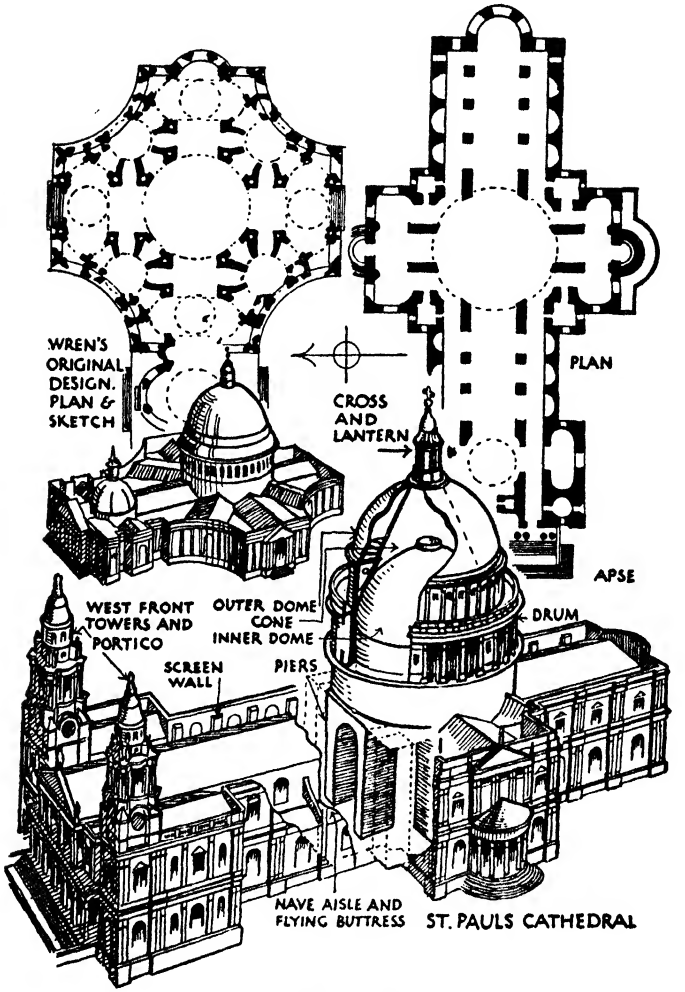

FIG. 57. ST. PAUL'S CATHEDRAL
(Sir Christopher Wren)

century, Sir Christopher Wren was the dominating influence in architecture. There were many other architects of course, amongst them being John Webb (1611–1674) who bridged the period after Inigo Jones, of whom he was a pupil. Many houses still continued to be built by the master builder—cum architect—who obtained his ideas and information from the copy-books of design which were published.

Wren (1632–1723) was a scholar and mathematician and he first held a Professorship of Astronomy at Oxford. He studied architecture in Paris and thus came under a certain amount of French influence, but his great contribution to English architecture was to introduce a treatment of the Renaissance style that was very much more free than the Palladian and entirely English in character. He was ingenious in his methods, and his use of material, often because of the necessity to cut down costs, produced a more honest constructive result. Wren used those traditional English materials—stone, brick, tiles, slates, wrought iron, wood—to produce satisfactory results in themselves, and because of themselves. In the Palladian style, consideration is of the forms produced, and the peculiar characteristics of the materials played little part. In Wren's hands the materials were considered as much as the form. Portland stone and paintwork were allowed to contrast with red brick. With equal freedom he designed towers, steeples, domes and similar features to give architectural emphasis. He built either the mighty St. Paul's Cathedral (Fig. 57), or a small country house or town hall, with a masterly sense of the rightness of the occasion. He produced a bold plan for the rebuilding of London after the Great Fire of 1666; he planned the broad gardens of Hampton Court, and again he showed his ability in dealing with individual problems by his City churches (Fig. 58) which often had to be contrived on the smallest and most awkward of sites. Not the least happy thing in his design is the manner in which he was able to fit the decorative work of the skilled building craftsman into his work. One feels in all his buildings that the amount of carving, plasterwork, or painting, is right; to have used more would have had an ostentatious and cheapening result; to have used less would have been niggardly. Moreover, in Gibbons the woodcarver, and Tijou the ironworker, Wren was fortunate in possessing two of the

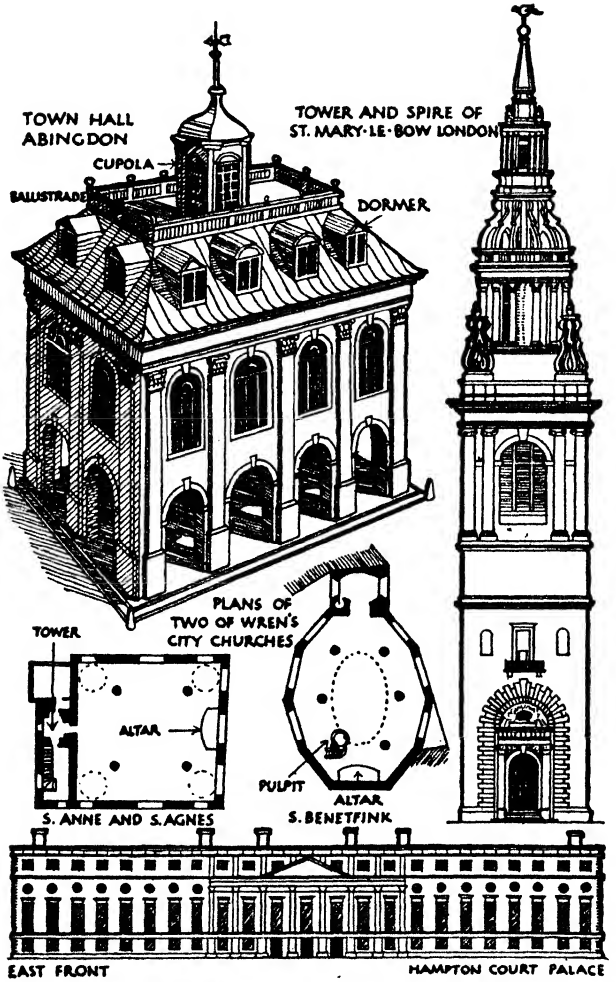

FIG. 58. SEVENTEENTH CENTURY: FURTHER EXAMPLES OF BUILDING

outstanding craftsmen in history, and their influence on their fellow workers must have been profound.

The House. In general, the planning and design of buildings continued along the same lines as those introduced by Inigo Jones. It was the free use of materials and motifs and the greater ingenuity in dealing with design and structural problems which characterizes the work of the Wren period. Under William and Mary there was considerable Dutch influence, as evidenced at Hampton Court with its brickwork, gardens, and waterways. The rather gay treatment of gable-ends was also popular in the smaller houses. Internally, panelling was still the most popular method of treating the walls, and the panels became larger and were often left in the natural wood finish. The bolection mould was still a feature. The doorways were emphasized by architrave and pediment (Fig. 55); and the carved woodwork by Gibbons (Fig. 55) or one of his school was a usual contribution to the general scheme of the room, and especially to emphasize the effect of the panel over the fireplace. Plasterwork and painting was the usual ceiling treatment. By this time there had occurred a marked increase in the technical skill of the woodworker, who achieved a great mastery over his material. Indeed the period from about 1670 to 1820 must be considered the golden age in furniture and woodwork generally. Staircases, hand-railing and balusters (Fig. 55), as well as the panelling of rooms and the treatment of doorways and porches, show the high degree of skill that had been attained. At this period the sliding sash window was introduced and speedily became almost standard for Classic buildings of any importance. The casement continued in use for the ordinary class of houses.

Marquetry. The advancing standard of living caused a great increase in the supply and use of furniture, and its construction became ever more skilled. Marquetry was introduced during the William and Mary period. There is a difference between marquetry and inlay. In inlay the surface is cut out and pieces of wood are inserted, while marquetry (Fig. 59) consists of a thin surface of veneers previously arranged in patterns, which is affixed to the supporting surface.

The Great Fire of London. Wren entered the Office of Works as an assistant in 1662 and was Surveyor General in

1666 at the time of the Great Fire of London. The rebuilding after this provided him with a great opportunity, and in St. Paul's Cathedral he designed one of the finest Renaissance buildings in Europe. He also designed fifty-three City churches, all of distinctive character.

St. Paul's Cathedral. For St. Paul's (Fig. 57) many designs were produced, including ideas for the restoration of the original Gothic building. It must be observed that the Protestant use of a church was to accommodate the congregation and make provision for preaching. There was not the need for smaller chapels or chantries, or for space for ritual. Yet the clergy insisted on a plan which was in arrangement medieval,[1] and although Wren's favourite design was based on a Greek cross,[2] the design adopted was based on a Latin cross. Under the great central dome is a large central space. To the East is the choir with an apse, to the West the nave, and to the North and South are transepts. The Western end of the nave is extended into a bay with two towers and a central pediment over two orders; the lower, which forms a portico, is Corinthian and the upper is Composite. A screening wall hides the roof and flying buttresses in the side elevation,

FIG. 59. MARQUETRY PANEL

[1] An examination of the planning and construction of St. Paul's Cathedral shows that it possesses in many ways the essentials of the Gothic cathedral. There are the nave, the aisles, transepts, flying buttresses, with the Great Dome occupying the position of the central tower.

[2] This Greek cross plan may have originated from one of the architectural copybooks of the period in which a plan very similar to Wren's may be seen.

and suggestions have been made that this is, in a sense, dishonest. Small exterior porticoes, semicircular in plan, are provided in the centre of each transept wall, North and South. The dome is placed over a high drum supported by eight piers, and has a colonnaded exterior. The dome is double, the external dome extending much higher than the internal. In this way the appearance inside is considered equally with that of the exterior. The dome which looks correct and well-proportioned from the interior would look insignificant from the outside, while a dome giving the necessary architectural emphasis externally would upset the internal proportions. A great cone links the two domes and supports the final articulation, the lantern and cross, which are estimated to weigh seven hundred tons. Both the outer dome and the cone are pierced to pass light into the opening at the top of the internal dome. The drum is strengthened by thirty-two buttresses, and the outward thrust present at the base of the dome is controlled by an iron band at the base of the cone and internal dome, and by an iron chain at the base of the exterior dome which is seated on the top of the smaller drum.

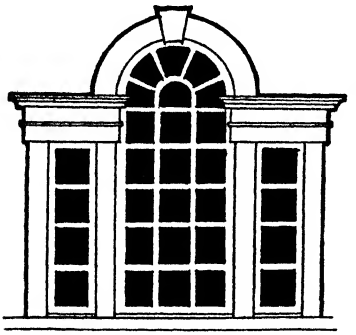

FIG. 60. VENETIAN WINDOW

The façade continues the orders of the West front with pilastered arcading, and the semicircular porches repeat the column motif.

Hampton Court. At Hampton Court, Wren grafted a Renaissance building on to the Tudor palace. The work here was done for William and Mary, and Queen Anne, and there is a certain amount of Dutch influence in the design. This is apparent in the use of brick and stone for the walls, a combination of materials which has much to do with the success of the building as a whole, though one part is in Tudor and the other in full English Renaissance.

Wren's addition was built around a fountain court and

contains the large staterooms. The Eastern façade extends somewhat to the North so that the central entrance is not central with the court. From this entrance radiate the main lines of the gardens with the consequent series of vistas. The façade (Fig. 58) is typical of Wren's mastery in the use of materials. The use of circular openings on either side of the central arcading is an interesting feature.

Circular-headed Openings. Circular and semicircular openings were used in the Renaissance, as also were arcadings with round arches. A window form which contained a central semicircular headed light with a smaller rectangular opening on each side is known as a Venetian window (Fig. 60).

The Achievement of Wren's Buildings. St. Paul's Cathedral and Hampton Court Palace show Wren working on the grand scale. The City churches show his ability to produce gems of design when very difficult problems were to be overcome (Fig. 58). His town and country houses and town halls show his great versatility and his ability to solve building problems. In Wren's work is seen the British genius for design at its best. Materials are used honestly and unashamedly to produce joyous and beautiful results. There seems to be no striving for mere ostentatious effect, and sheer reticence and decency secure lasting dignity. Every detail is studied and carefully judged to play its part in the whole composition, yet Wren secures a feeling of spontaneity and enjoyment in the whole of his planning and building, which is in contrast to mere academic correctness.

CHAPTER XIX

THE EIGHTEENTH CENTURY

Wars with France. The eighteenth century witnessed a long struggle between England and France, partly in the affairs of Europe and partly for dominance in overseas trade and expansion. The two countries were at war when the century opened and the Napoleonic Wars were in progress at the century's close. Between, there had been two other wars. In these conflicts sea power played a great part, and although the War of the American Colonies ended with their loss, it is true that, on the whole, we steadily extended our influence and possessions overseas throughout the period.

Parliament and the Hanoverian Dynasty. Politically the Crown lost yet more ground to the Commons. The establishment of the Hanoverian dynasty with George I in 1714 caused the country to have a German king who could speak little, if any, English, and who in any case was much happier when in Hanover. In these circumstances it is easy to understand how Parliament secured more and more power. Although the franchise was very limited and there were many "corrupt" boroughs, yet under this system, in spite of its many faults, there were excellent men who became members of Parliament, and who were closely in contact with all members of the community. The country squire probably knew by name all those who lived in his neighbourhood, and there were many local gatherings where he could keep abreast of local feelings and opinions. Similarly, the trading interests would be intimately represented.

Tories and Whigs. There were two political parties, the Whigs and the Tories. They roughly corresponded to the non-conforming and trading classes on the one hand, and the Church and land-owning classes on the other. The Tories were suspected of Jacobite sympathies, and after the rising of 1715 the Whigs were in power for a long period. Walpole, who led the Whigs from 1721 to 1742, may be considered as the first Prime Minister, although that title was not then in being. He saw, after the troubles of the last century and the

long war that had only recently concluded with France, that peace was essential to the country. Fortunately, France was led by a statesman with a similar desire, and it was not until mid-century that conflict broke out anew. During this period of peace a greater feeling of political and religious toleration had come over the country. The two parties were almost equal in strength, with the Whigs slightly the weaker. Therefore, even though they held political power, they could not use it to excess, and the Church and country institutions of the Tories were left alone.

Agricultural Development. Throughout this century England was still an agricultural country, although manufactures were gradually being extended, partly through Dutch and Huguenot settlers. The Dutch gave us much assistance in reclaiming and draining land. A great interest in scientific methods resulted in improvements both in crop and cattle farming. This raised the general standard of living for almost everyone. New farms were built with all the attendant buildings, cottages, barns, etc., and the land rose in value. Farming methods, however, were most successful when organized on a fairly large scale. This often caused the smallholder to give up his land to a large-scale farmer, and to seek employment in the towns. He might, of course, be offered work on the land, but there was less chance of employment, and it is possible also that he felt there were better prospects in the town.

High Level of Culture. For those fortunate enough to take advantage of it, the eighteenth century approximates to a Golden Age of culture, and the general standard of taste was extremely high. Craftsmen were possessed of a very high level of technical skill, which was allied to an almost equally high sense of rightness in design. They were working to satisfy the desires of a clientele priding itself upon its artistic knowledge and judgment. The "continental tour" was the standard way of finishing a gentleman's education, and although this sometimes had the result of causing importations of styles that were not entirely happy in their English surroundings (Fig. 61), it did create that interest in the crafts so essential to their healthy maintenance.

This high level of cultural appreciation extended through the arts, music, literature and the drama. In dress, too, it was

an age of the greatest luxury and magnificence. For those who could afford it, the gratification of fastidious tastes entered tremendously into their lives.

The "Gentlemen" Architect. Many gentlemen became "amateur" architects and devoted themselves to their "profession" with varying degrees of success. They probably worked in close touch with a builder-architect, for as yet there was not a complete cleavage in function between architect and builder, and working-builders obtained their knowledge from "pattern books," of which many were published. Of the amateur architects perhaps the best known were Sir John Vanbrugh and the Earl of Burlington. Vanbrugh was helped by Nicholas Hawksmoor, who had been a pupil and an assistant of Wren.

There were many successful professional architects, among whom were William Kent, Sir William Chambers, John Wood, the Adams Brothers, James Nash, and Sir John Soane.

The building work of this century may be divided into groups as follows: (1) Queen Anne and early Georgian 1700–1735, (2) Middle Georgian 1735–1760, (3) Late Georgian 1760–1800. The dates, however, are only very widely approximate.

First Period. In the first period there was a continuation of the Wren style, side by side with efforts to return to the more strictly severe and "correct" Palladian. Dutch influence was present at the opening of the century but disappeared gradually, although it lingered in work done by country craftsmen. In general, however, it was the heavier, more "scholastic" style of Palladian that became more and more popular, and was treated in an increasingly heavy manner.

Second Period. In the second period the heavier style almost completely triumphed. The inherent qualities of materials, their colours and textures again became neglected. The smaller town and country houses were still excellent, but in many of the large country mansions external appearance and effect was sought, often at the expense of satisfactory planning. The designs were considered in terms of monumental masses. There was much imitation of the Italian style in a countryside and climate to which it was unsuited (Fig. 61). One or more freak styles also crept in, such as queer and very forced treatments of Gothic (Fig. 63) and Chinese motifs. Rococo (Fig. 63), a most extreme form of Baroque design,

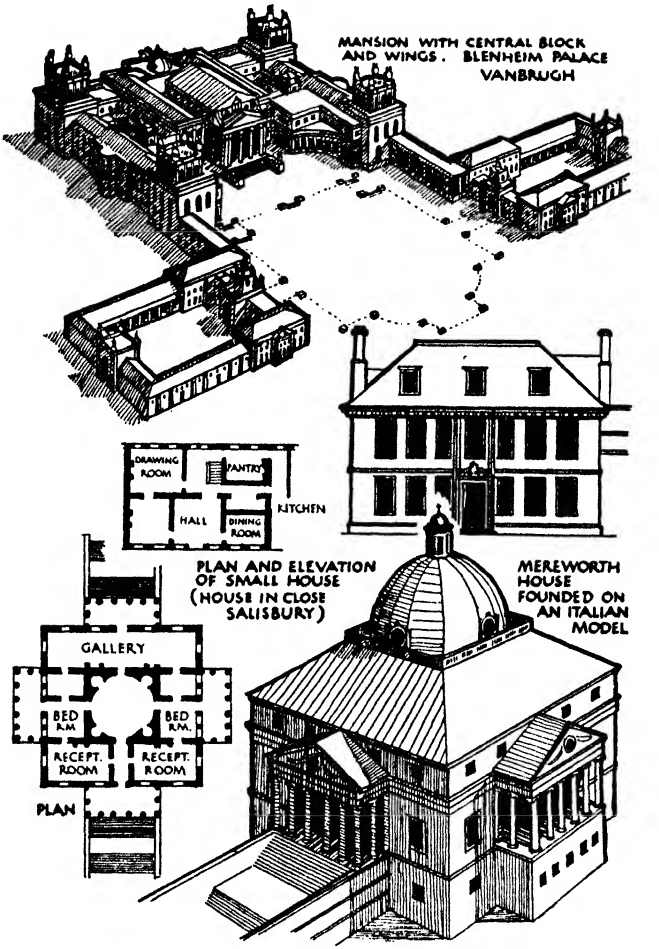

FIG. 61. COUNTRY HOUSE STYLES: EIGHTEENTH CENTURY

and an essentially Continental style of decoration also appeared from about 1740.

Third Period. The third period shows a revolt against the heaviness of the Middle Georgian. The revolt was led chiefly by the Adam brothers (Fig. 64), who were influenced by more recent archaeological discoveries, particularly those of Pompeii, and in Greece. The proportions throughout building became lighter, and decoration was simpler and much more delicate. Much of the Adams work was in stucco and plaster, and there was not the healthy interest in materials for their own sake which characterized the earlier work of the Renaissance. There was much fine work, however, particularly in the streets, squares and crescents of the rapidly growing towns. In many of the smaller houses of this period, great care was taken with the whole problem of house-design. Planning and the arrangements both internal and external were considered in drawing after drawing until satisfaction was achieved. The standard of draughtsmanship was extremely high, and the architect contented himself with the main structural design. Intricacies of constructional detail, he knew, could, with safety, be left to the builder.

The Large Mansion. For very large mansions an arrangement was adopted that had been used by Inigo Jones in the building of Stoke Park, Northamptonshire. This consisted of a central block, to which wings were added, but at a certain distance away; these were connected with the main building by colonnaded corridors. In the central block were the hall, saloon, dining room, library, and reception rooms, all of generous proportions. This accommodation was on the main floor, under which was a lower floor (not always basement or semi-basement), used by the servants. Above the main floor were the bedrooms. Usually there were two wings, one containing the kitchen, laundry and such service rooms, the other devoted to stabling. The wings projected a considerable distance at the front of the building to form a large court. All the buildings were arranged about a central axis which led to the entrance of the main block. This entrance was well marked by an imposing pediment and portico; and so much was this a feature that houses of this type are often said to be in the "pediment and portico" style. A great deal of thought was given to the arrangement of the entrance steps with

their balustrading and landings, leading up to the main floor level.

Well-known examples of these great houses are Blenheim Palace (Fig. 61) and Castle Howard, Yorkshire, both by Sir John Vanbrugh; Holkham Hall, Norfolk, by William Kent; and Kedleston Hall, Derbyshire, by Robert Adam, although designed by Brettingham and Paine. Holkham Hall has four wings; the same number was also projected for Kedleston Hall, but not built. Although the examples by Vanbrugh were built early in the century they may be considered as leading to the middle Georgian period. They are in the Palladian style and are heavy in conception. There is also the sacrifice of convenience in the interior, in order to obtain symmetrical ostentation of the exterior. Yet the handling of the masses is lively and there is little doubt that the owners of such houses desired these imposing buildings.

The Smaller House. The simple block plan introduced by Inigo Jones was used for the vast majority of detached houses (Fig. 61), and there are numerous examples of eighteenth century houses of this type in all parts of the country. They reflect in details the date at which they were built, but in essence the arrangement remains the same through the whole period from 1650 onward. This arrangement was discussed on page 118. A number of houses were built in imitation of actual Italian buildings, without consideration of the different conditions in this country. Mereworth Castle in Kent (Fig. 61) and Lord Burlington's villa at Chiswick are examples of these.

Baroque Architecture. There comes a stage in most arts where particular ideas seem to reach a state of exhaustion. "It has been done so often before, can't we do something fresh?" is what we feel; and instead of something really fresh being attempted, the well-tried arrangements are often dressed up to give a superficially "different" effect. There is *Baroque* in a nutshell; a dressing-up of old things to look like new, done with great vigour and technical ability, but superficial and often unsound in real principles of building. The amount of this influence varies greatly. On the Continent, particularly in France and Germany, it held great sway. In England, although it had a vogue, it was never really popular, it never really "belonged." Yet Wren was influenced to a slight

degree by Baroque, and he was able with his Anglicizing genius to use Baroque freedom and vigour to good effect. With Wren, Baroque is but a breath, used to implant life into his design. Vanbrugh was much more under its influence, and his masses are thrown about in a thoroughly Baroque manner, securing effects by colonnades, steps and statuary in a method akin to stage scenery.

Rococo. As a style of "interior decoration," Baroque had a somewhat greater vogue in this country. *Rococo* is the name given to the most extreme form of Baroque. Excessive use of scrolls, shells and curves arranged in fancifully panelled manner with much gilding amid light colours of bright hue mark this style (Fig. 63). In passing any judgment, it must be remembered how bright and gay and typical of certain characteristics of the period was this decoration; interior decoration must at all times be considered in relation to the costumes of the people who are most often to use the rooms.

The Terrace. In the consideration of eighteenth century building it is necessary to remember the many beautiful squares, terraces, and crescents that were built in the now rapidly growing towns and cities throughout the country (Fig. 62). In the design of these blocks the individual house was seen to be but a part of the whole, and it was by accepting this principle that dignity and decency in civic architecture was secured. The street was accepted as the main unit upon which to work, yet the planning of the individual house should not be sacrificed in convenience just to enforce this aim. Successful planning becomes a question of designing, within a certain shape, a well arranged house, and of satisfying both conditions. The plan of the terrace house may be based very much on the same ideas as the symmetrical detached house; that is, with a central entrance, hall, and staircase at the front and with rooms radiating from these (Fig. 62, plan 1). Or it may have the entrance, hall, and staircase at one side and the rooms arranged in an "L" shape around this space (Fig. 62, plan 2). Another plan places the staircase centrally at the rear of the house, with a somewhat large and imposing entrance hall having rooms on either side on the ground floor, and with rooms radiating from the staircase on other floors (Fig. 62, plan 3).

The exteriors of these houses were carefully designed to

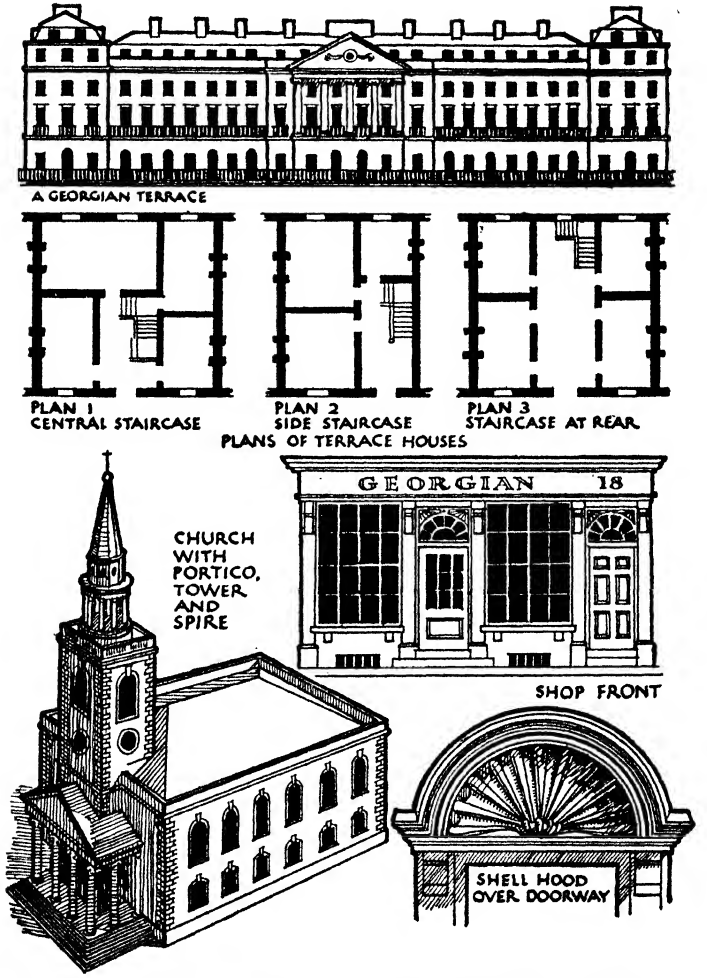

FIG. 62. EIGHTEENTH CENTURY TERRACE HOUSES; CHURCH; SHOP; AND SHELL HOOD

form part of a complete whole. The effect was secured chiefly by means of a repetition of vertical lines, such as pilasters and the well-proportioned window openings. These were bound together by the horizontal lines of cornice and balustrading, the base being emphasized by a plinth. In general, the features of the façade of the Georgian house are introduced in a terrace or crescent to form a much longer design (Fig. 62).

Variety was sometimes secured by the use of semicircular-headed windows and shutters. Horizontal lines and the reveals of window openings were often "picked out" with white or light coloured paint. In London a by-law early in the eighteenth century caused all window openings to be arched, and the windows to be more deeply set back from the wall face than is normal in Georgian building.

Doorways. Much fine craftsmanship was devoted to the doorways in every type of house, and the shell hoods (Fig. 62) were particularly attractive. Wrought ironwork, too, was often used with very happy effects and was excellently designed and executed.

Churches. The eighteenth century churches (Fig. 62) continued in the style and general features of those built by Wren. In planning, the main idea was to provide as much space as possible in which the congregation could be most easily arranged around the preacher. Galleries were used as a means of adding to the seating without increasing the ground floor space, and were very typical of the Georgian church.

The west and entrance front was usually made into the most arresting architectural feature, often by a portico over which was a tower. Most Georgian churches have towers and it is interesting to compare the essentials of Gothic towers with these.

Shop Fronts. Shop fronts of the latter half of this century were extremely interesting and often most charming in their arrangement of window and doorway (Fig. 62). A central doorway with a bay window on either side was very typical, and the relationship of the shop with the façade above was usually very carefully considered. Glass could, up to this time, be obtained only in comparatively small sizes, so that the windows were made up with a number of panes. Shop fronts were also designed in which the door was placed at the

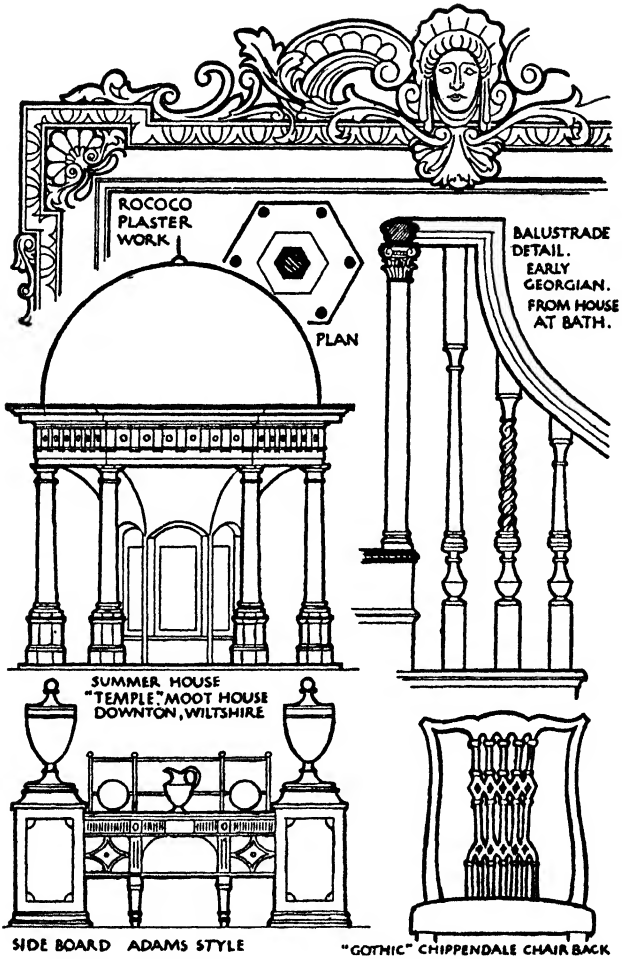

FIG. 63. EIGHTEENTH CENTURY DECORATIVE DETAIL

side. This compares with the arrangement in the terrace, having either a central or a side entrance with the staircase and rooms placed accordingly on the upper floors.

Other Buildings. There were many buildings erected in the Georgian Period besides houses and churches. Schools and colleges, banks, hospitals, almshouses and Government buildings were erected to meet the growing needs of a nation which was fully conscious of its rising importance. Opportunities for fine architectural compositions were afforded by the pavilions, summer-houses (Fig. 63), entrance gates and bridges, which were used as features in the gardens and park lands of the great country mansions.

Landscape Gardening. The gardens surrounding a house of this period had much to do with its appearance. Landscape gardening was closely associated with the building activities of the eighteenth century, and few people realize how much of our "natural" countryside was artificially created. This style of gardening is very English in character. In all branches of activity our method is to work *with* material, rather than to impose our will upon it. Our genius is for partnership rather than dictatorship.

Interiors. Interior decoration during the century followed the same lines as the rest of building activities. There was the same early struggle between the Wren and the Palladian style, the gradually increasing weight and lack of liveliness, the introduction of the Baroque and Rococo, and the queer treatments of Chinese and Gothic motifs seeking to satisfy the demand for "something fresh" and finally the well-organized late Georgian style developed from Pompeian and Greek sources.

The walls of rooms in the early part of the century were panelled chiefly with wood, but as the Palladian lack of interest in material triumphed, they were painted, while painted plaster was increasingly employed. Tapestry was used to some extent, and Chinese wallpapers were becoming increasingly popular. English wallpaper had now been manufactured for almost two centuries, and the use of it by Kent for decorations in the King's palace showed the steady increase in its popularity and prestige.

Doors and fireplaces received great attention; the broken pediment (Fig. 55) and the swelling frieze (Fig. 54) were

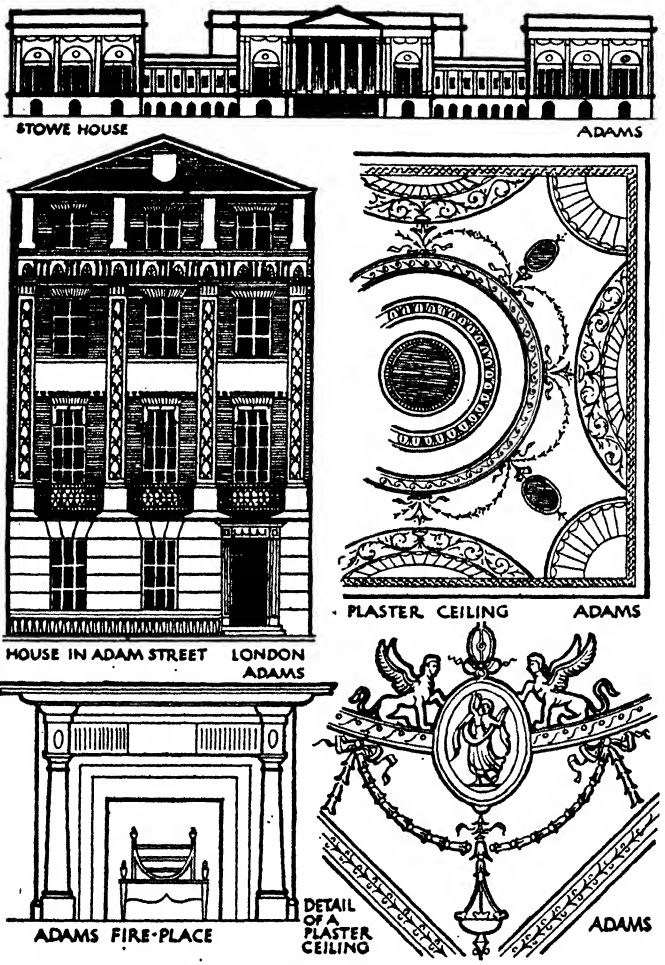

FIG. 64. ADAMS WORK OF LATE EIGHTEENTH CENTURY

introduced at the close of the seventeenth century. Both were used through the eighteenth century, but the swelling frieze is really typical only of the William and Mary and Queen Anne periods. Dutch candelabras in brass, and silver wall sconces, are also features of these periods. The ceilings continued to be of plaster throughout the century, and followed the trends of fashionable design.

Furniture. The best furniture was made of walnut in the early period, of mahogany in the later period, and of satinwood at the close of the century. Furniture was specially designed for use with the Rococo and Chinese decorations. The great influence upon furniture of the middle period was exercised by Chippendale, and his work covered all these styles. The decorative work on walls and ceilings of the late century (Fig. 64), in the Adams style was carried out chiefly in a special form of fibrous plaster which was cast in moulds. It was extremely light and graceful and was painted in pastel tints. The paintings of Angelica Kauffman were often used to enhance this decoration, and the pottery of Wedgwood fitted intimately into the scheme. Furniture was designed by Adams himself, and the sideboards (Fig. 63) were characteristic. Hepplewhite and Sheraton furniture was also designed to be in accord with these interiors.

The Greek Influence. As the century drew to a close the influence of the Greek style increased, and a tendency to heaviness became apparent in some of the work.

The Industrial Revolution. But a great change was looming ahead which was to affect the future profoundly. This change, which we call the Industrial Revolution, had already commenced, although it probably was not apparent at the time. England was in course of turning from an agricultural to an industrial nation. The wealth and influence which existed previously in the land were to be transferred to busy industrial towns. The simple fact that machinery was introduced to perform with incredible rapidity many tasks previously done entirely by hand raised social and political problems that are with us to-day. Much that is good has come from this change; much that is evil also. In Book II will be traced the progress of building during the periods that were, and still are, affected by the coming of the Industrial Revolution.

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